1982 ANNUAL ELECTRIC POWER SURVEY

A Report of the Electric Power Survey Committee of the

EDISON ELECTRIC INSTITUTE The association of electric companies

Fig. 1 U.S. Regions of the North American Electric Reliability Council

Identification of Reliability Councils:

ECAR—East Central Area Reliability Coordination Agreement
ERCOT—Electric Reliability Council of Texas
MAAC—Mid-Atlantic Area Council
MAIN—Mid-America Interpool Network
MAPP—Mid-continent Area Power Pool
NPCC—Northeast Power Coordinating Council
SERC—Southeastern Electric Reliability Council
SPP—Southwest Power Pool
WSCC—Western Systems Coordinating Council

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CONTENTS

Foreword 3

Definitions and Methods of Summarization ... 4

Part I. Electric Power Supply 5

Peak Capabilities, Peak Loads, and Capability Margins 5
Relationship Between Summer and Winter Peak Loads 13
Kilowatt-Hour Requirements 14
Annual Load Factors 16
Comparison With Previous Fuel Survey 18
Fossil Fuel Requirements for Electric Generation in Physical Units 19
Net Generation by Source, Fuels and Hydro – Millions of Kilowatt-Hours 20
Additions to Electric Generating Capacity 22
Nuclear Electric Power 25

Part II. Manufacture of Heavy Electric Power Equipment in the U.S.A 26

Manufacture of Electric Generating Equipment, Steam and Hydraulic Units – 4,000 Kw and Larger 27
Manufacture of Steam Turbine-Generators – 4,000 Kw and Larger 28
Manufacture of Conventional Steam Turbine-Generators – 4,000 Kw and Larger 29
Manufacture of Nuclear Steam Turbine-Generators – 50,000 Kw and Larger 30
Manufacture of Generators for Hydraulic Turbines – 4,000 Kw and Larger 31
Manufacture of Conventional Steam Generators – 450-Psi Pressure and Higher 32
Manufacture of Hydraulic Turbines – 5,000 Horsepower and Larger 33
Manufacture of Combustion Turbine-Generators – 4,000 Kw and Larger 34
Manufacture of Power Transformers – 501 Kva and Larger 35
Manufacture of Nuclear Power Reactors – 50,000 Kwe and Larger 36

Appendix I

Scheduled Additions to Electric Generating Capacity Based on Scheduled Dates of Commercial Operation as of April 1, 1982, and Including Capacity Placed in Service During the First Three Months of 1982 37

1982 ANNUAL ELECTRIC POWER SURVEY

FOREWORD

The electric power supply data shown in Part I of this report are derived partly from EP-411 reports for the years 1980 through 1982 submitted to the United States Department of Energy, and partly by direct reports to the head office of the North American Electric Reliability Council (NERC) in Princeton, New Jersey, by the regional reliability councils. Forecast values used herein are those checked and validated by NERC HQ and published in their report, ELECTRIC POWER SUPPLY AND DEMAND 1982-1991. Historical capability values for winter are estimated by EEI based on a combination of data obtained from previous editions of the NERC report and from 1980 and 1981 EP-411 submissions to the Department of Energy.

Until last year, Annual Electric Power Survey power supply figures had been obtained by means of questionnaires sent to the regional and subregional utility reporting entities by EEI on behalf of the Electric Power Survey Committee. The historical and forecast power supply data in this report are all from the new data source (NERC) and are internally consistent. For a discussion of the magnitude of the break between the old EEI-collected series and the NERC-collected series now reformatted for publication in these annual surveys, see the FOREWORD in last year's report.

Data in this survey represent the entire electric utility industry of the contiguous United States, including investor-owned systems and those of governmental agencies – Federal, Municipal and State & Local – and also rural electric cooperatives. With the switch to the new data source in last year's Annual Electric Power Survey, blow-up factors formerly used to expand the sum of the nine regions to values entitled "Total Electric Utility Industry of the Contiguous United States" were no longer considered necessary and therefore were dropped.

The reported data include some industrial power installations whose operations are coordinated with the utility systems with which they are interconnected and which thereby contribute to the public supply. The data do not include any isolated industrial or institutional power installations.

Survey results pertaining to power system capabilities, loads, capability margins, kilowatt-hour requirements and fuel data are presented for each of the nine reliability councils of NERC. Boundaries of the nine reliability councils are shown by the map in Fig. 1. The North American Electric Reliability Council encompasses essentially all utility systems in the United States and five Canadian provinces, but the data presented in this survey cover only the systems in the contiguous United States. Summations of these regional data are presented and referred to as "Survey Totals for the Nine Regions."

Part II of this report presents the results of the quarterly survey on the manufacture and scheduling of heavy electric power equipment made as of April 1, 1982, by the Electric Power Survey Committee of the Edison Electric Institute in cooperation with representatives of the electric power systems or power areas throughout the contiguous United States, with the nation's principal manufacturers of heavy electric power equipment, and with those foreign manufacturers supplying electric generating equipment to U.S. electric power systems.

The Electric Power Survey Committee is the only group servicing the electric utility and allied industries that conducts surveys on the manufacture and scheduling of heavy electric power equipment on a quarterly basis. These quarterly surveys are also unique in that information on each planned project is cross checked with both the manufacturer and the system ordering the equipment. Furthermore, the time frame for ordered and scheduled units is not limited to ten years, but extends into the future as far out as equipment is officially ordered and scheduled for installation. The resulting data file also allows the quarterly tracking of unit slippages and cancellations.

Forecasts presented in this report are based on the best information available as of April 1, 1982. There could, however, be delays in the installation of scheduled capability and reductions in the capability margins based on the scheduled capability. This may occur due to the inability of utilities to secure the financing necessary to sustain the construction of new generating capacity. The delay or denial of necessary rate increases, the cost of complying with continually changing regulations, and rapidly escalating fuel costs could also adversely affect the financial condition of the industry. Furthermore, the capability of generating units now operational could be restricted due to fuel availability problems or environmental operating requirements. It is essential that the installation of both nuclear and coal-fired generating units proceed as currently scheduled and that conservation and load management programs be pursued at the same time to assure an adequate bulk electric power supply in the 1980's.

Definitions of the terms used in this report, together with information concerning methods of summarizing the data, appear on the following page.

DEFINITIONS AND METHODS OF SUMMARIZATION

Capability of the power systems, as used herein, is equivalent to Planned Resources, defined by the North American Electric Reliability Council to include "the total installed generating capacity which is existing, presently under construction, or in various stages of planning; plus scheduled capacity purchases, less capacity sales; less total generating capacity out of service in deactivated shutdown status."

This capability must provide for scheduled maintenance, emergency outages, and system operating requirements, in addition to the estimated load and any unforeseen load.

The capability of existing installations is determined by the net dependable capacity at the time of the peak load and the kilowatt-hour requirements of the system. Estimated capabilities of these systems served wholly or in part by hydraulic power sources are determined for adverse hydro conditions.

The capabilities of all systems normally interconnected are based upon fully coordinated operation. Peak capability refers to the maximum capability, as defined above, at the approximate time and for the duration of the load referred to, that is, at the time of the summer peak load or the winter peak load.

Regional capability, as reported herein, is the sum of the capabilities of the systems serving the region.

Peak Load is the maximum load encountered on the system during a given period of time.

Regional summer and winter peak loads represent the non-coincident maximum loads occurring during these two seasons.

Regional peak loads as reported herein are the sum of the peak loads on the systems serving the region, less demands which are interruptible by contract.

Capability Margin is the difference between net system capability and system maximum load requirements (peak load). It is the margin of capability available to provide for scheduled maintenance, emergency outages, system operating requirements, and unforeseen loads. On a regional or national basis, it is the difference between aggregate net system capability of the various systems in the region or nation and the sum of system maximum (peak) loads without allowance for time diversity between the loads of the several systems. However, within a region account is taken of diversity between peak loads of systems that are operated as a closely coordinated power pool.

PART I/ELECTRIC POWER SUPPLY

SUMMER PEAK CAPABILITIES, PEAK LOADS, AND CAPABILITY MARGINS

Summer peak capabilities, peak loads, and capability margins as recorded for the years 1980 and 1981, and as now forecast for the years 1982 through 1991, on the basis of adverse hydro conditions, are shown in Table I, page 6. Similar information for winter is shown in Table II, page 8.

Fig. 2, page 10, is a graphic presentation of the summer situation for the total electric utility industry of the contiguous United States during the period 1954 through 1981. The chart also includes the present forecasts for the summer of the years 1982 through 1991 based on adverse hydro conditions.

NERC does not collect or publish historical values for capability at time of summer peak load analagous to NERC's summer planned resources series. Therefore, the historical capability margins shown in Table 1 are derived from a combination of capability at time of summer peak from the Committee's own Post-Summer Electric Power Surveys with the revised actual summer peak values reported by NERC.

SUMMER CAPABILITIES

The summer capability forecasts shown by this survey are below the values indicated in the 1981 Annual Survey of last April. For the nine regions taken together, reductions range from 1.3 percent to 3.8 percent for the years 1982 through 1990.

The 1991 summer capability of the sum of the nine regions is forecast at 740.4 million kilowatts. This represents an average annual increase of 2.6 percent for the ten-year period from the summer of 1981.

SUMMER PEAK LOADS

Preliminary figures published in the 1981 Post-Summer Electric Power Survey indicated that the 1981 summer peak load was up 1.0 percent over 1980. According to final data now available, the actual increase in the 1981 summer peak load was only 0.3 percent.

Summer peak load forecasts have been reduced by almost all reliability councils. For the nine regions taken together, reductions range from 2.0 percent to 5.0 percent for the years 1982 through 1990, compared with values shown for those years in the April 1981 Survey.

The summer peak load for the sum of the nine regions, which was 428.3 million kilowatts in 1981, is forecast to reach 438.1 million kilowatts in 1982, an increase of 2.3 percent. For the summer of 1991, the forecast is 569.1 million kilowatts. This is an average annual increase of 2.9 percent for the ten-year period from the summer of 1981.

The average annual increase in the winter peak load for the same ten-year period is 3.1 percent.

SUMMER CAPABILITY MARGINS

Of the 81 summer capability margin percentages shown for the nine-year period 1982-1990 for the nine reliability councils, 57 of the values are higher than those in the April Survey of a year ago, and 24 of the percent margins are lower. MAIN shows consistently higher margins from 1982 through 1990, while NPCC, MAAC, ECAR, SERC, SPP, ERCOT and WSCC show more increases than reductions for the same period. MAPP is the only region showing more reductions than increases in projected capability margin.

Summer capability margins for the country as a whole are higher from 1982 through 1990, generally because peak load forecasts have been reduced more than expected capabilities. As now forecast, the summer capability margins for the country range from 34.7 percent in 1984 to 30.1 percent in 1991, shown in these surveys for the first time.

Table I SUMMER CAPABILITIES, PEAK LOADS, AND RESERVE MARGINS (Thousands of Kilowatts)

Regions		Actual 1980	1981	% Inc	1982	% Inc	1983	% Inc	1984	% Inc
NPCC	Capability Scheduled	52,038	51,752	0.5–	51,670	0.2–	52,914	2.4	54,144	2.3
	Peak Load	36,831	35,640	3.2–	35,764	0.3	36,364	1.7	36,884	1.4
	Capability Margin	15,207	16,112		15,906		16,550		17,260	
	Capability Margin, %	41.3	45.2		44.5		45.5		46.8	
MAAC	Capability Scheduled	45,137	44,962	0.4–	44,810	0.3–	46,494	3.8	46,521	0.1
	Peak Load	34,525	33,633	2.6–	34,465	2.5	35,175	2.1	35,885	2.0
	Capability Margin	10,612	11,329		10,345		11,319		10,636	
	Capability Margin, %	30.7	33.7		30.0		32.2		29.6	
ECAR	Capability Scheduled	87,416	89,902	2.8	88,900	1.1–	92,440	4.0	97,344	5.3
	Peak Load	63,021	64,150	1.8	64,334	0.3	67,080	4.3	70,134	4.6
	Capability Margin	24,395	25,752		24,566		25,360		27,210	
	Capability Margin, %	38.7	40.1		38.2*		37.8*		38.8*	
SERC	Capability Scheduled	110,220	113,775	3.2	122,136	7.3	125,368	2.6	130,255	3.9
	Peak Load	89,815	90,513	0.8	91,512	1.1	95,280	4.1	97,797	2.6
	Capability Margin	20,405	23,262		30,624		30,088		32,458	
	Capability Margin, %	22.7*	25.7*		33.5*		31.6		33.2	
MAIN	Capability Scheduled	42,737	41,104	3.8–	42,863	4.3	43,105	0.6	46,562	8.0
	Peak Load	33,894	32,561	3.9–	34,285	5.3	35,137	2.5	36,035	2.6
	Capability Margin	8,843	8,543		8,578		7,968		10,527	
	Capability Margin, %	26.1	26.2		25.0		22.7		29.2	
SPP	Capability Scheduled	51,509	55,889	8.5	58,103	4.0	62,159	7.0	63,276	1.8
	Peak Load	44,981	44,623	0.8–	45,221	1.3	47,117	4.2	48,831	3.6
	Capability Margin	6,528	11,266		12,882		15,042		14,445	
	Capability Margin, %	14.5	25.2		28.5		31.9		29.6	
ERCOT	Capability Scheduled	42,248	42,080	0.4–	43,434	3.2	44,514	2.5	46,939	5.4
	Peak Load	31,722	32,535	2.6	34,027	4.6	35,389	4.0	36,755	3.9
	Capability Margin	10,526	9,545		9,407		9,125		10,184	
	Capability Margin, %	33.2	29.3		27.6		25.8		27.7	
MAPP	Capability Scheduled	26,268	28,200	7.4	28,191	0.0–	29,328	4.0	29,842	1.8
	Peak Load	19,378	18,985	2.0–	20,458	7.8	21,423	4.7	22,322	4.2
	Capability Margin	6,890	9,215		7,733		7,905		7,520	
	Capability Margin, %	35.6	48.5		37.8		36.9		33.7	
WSCC	Capability Scheduled	100,966	104,392	3.4	101,679	2.6–	109,333	7.5	113,504	3.8
	Peak Load	72,891	75,655	3.8	78,020	3.1	79,482	1.9	81,867	3.0
	Capability Margin	28,075	28,737		23,659		29,851		31,637	
	Capability Margin, %	38.5	38.0		30.3		37.6		38.6	
Survey Totals for the Nine Regions – Summer	Capability Scheduled	558,539	572,056	2.4	581,786	1.7	605,655	4.1	628,387	3.8
	Annual Increase		13,517		9,730		23,869		22,732	
	Peak Load	427,058	428,295	0.3	438,086	2.3	452,447	3.3	466,510	3.1
	Annual Increase		1,237		9,791		14,361		14,063	
	Capability Margin	131,481	143,761		143,700		153,208		161,877	
	Capability Margin, %	30.8	33.6		32.8		33.9		34.7	

*Peak occurred, or is expected to occur, in winter.

1985	% Inc	1986	% Inc	1987	% Inc	1988	% Inc	1989	% Inc	1990	% Inc	1991	% Inc
54,765	1.1	56,874	3.9	58,518	2.9	59,262	1.3	59,240	0.0 –	59,700	0.8	59,693	0.0 –
37,574	1.9	38,314	2.0	39,224	2.4	40,054	2.1	40,894	2.1	41,674	1.9	42,404	1.8
17,191		18,560		19,294		19,208		18,346		18,026		17,289	
45.8		48.4		49.2		48.0		44.9		43.3		40.8*	
48,644	4.6	49,284	1.3	49,997	1.4	52,308	4.6	52,308	0.0	52,558	0.5	53,177	1.2
36,695	2.3	37,355	1.8	37,945	1.6	38,695	2.0	39,445	1.9	40,205	1.9	40,915	1.8
11,949		11,929		12,052		13,613		12,863		12,353		12,262	
32.6		31.9		31.8		35.2		32.6		30.7		30.0	
100,858	3.6	102,912	2.0	106,089	3.1	108,964	2.7	109,922	0.9	111,713	1.6	112,872	1.0
72,118	2.8	74,210	2.9	76,560	3.2	79,223	3.5	81,715	3.1	83,851	2.6	86,155	2.7
28,740		28,702		29,529		29,741		28,207		27,862		26,717	
39.9*		38.7*		38.6*		37.5*		34.5*		33.2*		31.0*	
133,737	2.7	136,684	2.2	141,973	3.9	144,171	1.5	148,889	3.3	151,705	1.9	157,334	3.7
100,463	2.7	102,977	2.5	106,058	3.0	109,121	2.9	112,210	2.8	115,763	3.2	119,240	3.0
33,274		33,707		35,915		35,050		36,679		35,942		38,094	
33.1		32.7*		33.9		32.1*		32.7*		31.0*		31.9*	
48,160	3.4	49,230	2.2	51,191	4.0	51,074	0.2 –	51,140	0.1	51,388	0.5	51,777	0.8
36,867	2.3	37,622	2.0	38,419	2.1	39,249	2.2	40,123	2.2	41,019	2.2	41,892	2.1
11,293		11,608		12,772		11,825		11,017		10,369		9,885	
30.6		30.9		33.2		30.1		27.5		25.3		23.6	
65,890	4.1	67,549	2.5	68,010	0.7	69,576	2.3	71,600	2.9	73,174	2.2	76,219	4.2
50,710	3.8	52,530	3.6	54,287	3.3	56,071	3.3	57,860	3.2	59,692	3.2	61,496	3.0
15,180		15,019		13,723		13,505		13,740		13,482		14,723	
29.9		28.6		25.3		24.1		23.7		22.6		23.9	
47,017	0.2	50,082	6.5	51,691	3.2	53,439	3.4	55,470	3.8	57,740	4.1	59,307	2.7
38,504	4.8	40,165	4.3	41,939	4.4	43,722	4.3	45,547	4.2	47,249	3.7	49,257	4.2
8,513		9,917		9,752		9,717		9,923		10,491		10,050	
22.1		24.7		23.3		22.2		21.8		22.2		20.4	
29,768	0.2 –	30,715	3.2	30,598	0.4 –	30,783	0.6	31,893	3.6	32,023	0.4	33,273	3.9
23,217	4.0	23,954	3.2	24,683	3.0	25,466	3.2	26,196	2.9	26,996	3.1	27,802	3.0
6,551		6,761		5,915		5,317		5,697		5,027		5,471	
28.2		28.2		24.0		20.9		21.7		18.6		19.7	
117,545	3.6	120,005	2.1	124,323	3.6	127,206	2.3	130,562	2.6	133,853	2.5	136,722	2.1
84,368	3.1	86,883	3.0	89,561	3.1	92,390	3.2	94,932	2.8	97,482	2.7	99,979	2.6
33,177		33,122		34,762		34,816		35,630		36,371		36,743	
39.3		38.1		38.8		37.7		37.5		37.3		36.8	
646,384	2.9	663,335	2.6	682,390	2.9	696,783	2.1	711,024	2.0	723,854	1.8	740,374	2.3
17,997		16,951		19,055		14,393		14,241		12,830		16,520	
480,516	3.0	494,010	2.8	508,676	3.0	523,991	3.0	538,922	2.8	553,931	2.8	569,140	2.7
14,006		13,494		14,666		15,315		14,931		15,009		15,209	
165,868		169,325		173,714		172,792		172,102		169,923		171,234	
34.5		34.3		34.2		33.0		31.9		30.7		30.1	

Table II WINTER CAPABILITIES, PEAK LOADS, AND RESERVE MARGINS (Thousands of Kilowatts)

Regions		Actual 1980/81	1981/82	% Inc	1982/83	% Inc	1983/84	% Inc	1984/85	% Inc
NPCC	Capability Scheduled	52,986	53,060	0.1	53,059	0.0–	53,884	1.6	55,638	3.3
	Peak Load	35,340	35,199	0.4–	35,280	0.2	35,760	1.4	36,360	1.7
	Capability Margin	17,646	17,861		17,779		18,124		19,278	
	Capability Margin, %	49.9*	50.7*		50.4*		50.7*		53.0*	
MAAC	Capability Scheduled	47,638	46,567	2.2–	48,154	3.4	48,633	1.0	50,154	3.1
	Peak Load	29,730	30,726	3.4	30,595	0.4–	31,435	2.7	32,415	3.1
	Capability Margin	17,908	15,841		17,559		17,198		17,739	
	Capability Margin, %	60.2*	51.6*		57.4*		54.7*		54.7*	
ECAR	Capability Scheduled	89,836	91,731	2.1	92,983	1.4	97,072	4.4	101,686	4.8
	Peak Load	62,225	63,188	1.5	65,278	3.3	68,629	5.1	70,861	3.3
	Capability Margin	27,611	28,543		27,705		28,443		30,825	
	Capability Margin, %	44.4*	45.2*		42.4		41.4		43.5	
SERC	Capability Scheduled	116,472	122,379	5.1	125,417	2.5	129,127	3.0	133,333	3.3
	Peak Load	90,354	93,348	3.3	92,187	1.2–	94,786	2.8	97,694	3.1
	Capability Margin	26,118	29,031		33,230		34,341		35,639	
	Capability Margin, %	28.9	31.1		36.0		36.2*		36.5*	
MAIN	Capability Scheduled	42,212	41,596	1.5–	43,766	5.2	44,769	2.3	47,350	5.8
	Peak Load	26,631	26,965	1.3	28,013	3.9	28,949	3.3	29,877	3.2
	Capability Margin	15,581	14,631		15,753		15,820		17,473	
	Capability Margin, %	58.5*	54.3*		56.2*		54.6*		58.5*	
SPP	Capability Scheduled	51,186	54,004	5.5	57,481	6.4	61,150	6.4	63,984	4.6
	Peak Load	30,681	32,087	4.6	33,587	4.7	34,895	3.9	36,221	3.8
	Capability Margin	20,505	21,917		23,894		26,255		27,763	
	Capability Margin, %	66.8*	68.3*		71.1*		75.2*		76.6*	
ERCOT	Capability Scheduled	42,248	40,627	3.8–	42,845	5.5	43,955	2.6	46,304	5.3
	Peak Load	23,962	25,393	6.0	25,585	0.8	26,643	4.1	27,902	4.7
	Capability Margin	18,286	15,234		17,260		17,312		18,402	
	Capability Margin, %	76.3*	60.0*		67.5*		65.0*		66.0*	
MAPP	Capability Scheduled	26,541	28,651	7.9	28,557	0.3–	29,760	4.2	29,597	0.5–
	Peak Load	17,420	17,508	0.5	18,399	5.1	19,199	4.3	20,110	4.7
	Capability Margin	9,121	11,143		10,158		10,561		9,487	
	Capability Margin, %	52.4*	63.6*		55.2*		55.0*		47.2*	
WSCC	Capability Scheduled	103,076	102,469	0.6–	104,091	1.6	110,691	6.3	114,094	3.1
	Peak Load	68,224	66,692	2.2–	74,836	12.2	77,159	3.1	79,815	3.4
	Capability Margin	34,852	35,777		29,255		33,532		34,279	
	Capability Margin, %	51.1*	53.6*		39.1*		43.5*		42.9*	
Survey Totals for the Nine Regions– Winter	Capability Scheduled	572,195	581,084	1.6	596,353	2.6	619,041	3.8	642,140	3.7
	Annual Increase		8,889		15,269		22,688		23,099	
	Peak Load	384,567	391,106	1.7	403,760	3.2	417,455	3.4	431,255	3.3
	Annual Increase		6,539		12,654		13,695		13,800	
	Capability Margin	187,628	189,978		192,593		201,586		210,885	
	Capability Margin, %	48.8	48.6		47.7		48.3		48.9	

*Peak occurred, or is expected to occur, in summer.

1985/86	% Inc	1986/87	% Inc	1987/88	% Inc	1988/89	% Inc	1989/90	% Inc	1990/91	% Inc	1991/92	% Inc
55,540	0.2 –	58,791	5.9	60,134	2.3	60,210	0.1	60,759	0.9	60,655	0.2 –	61,363	1.2
37,120	2.1	37,910	2.1	38,850	2.5	39,730	2.3	40,720	2.5	41,650	2.3	42,540	2.1
18,420		20,881		21,284		20,480		20,039		19,005		18,823	
49.6*		55.1*		54.8*		51.5*		49.2*		45.6*		44.2	
51,243	2.2	51,575	0.6	53,461	3.7	54,728	2.4	54,728	0.0	54,977	0.5	55,886	1.7
33,385	3.0	34,275	2.7	35,205	2.7	36,185	2.8	37,135	2.6	38,105	2.6	39,065	2.5
17,858		17,300		18,256		18,543		17,593		16,872		16,821	
53.5*		50.5*		51.9*		51.2*		47.4*		44.3*		43.1*	
103,615	1.9	107,695	3.9	108,832	1.1	110,948	1.9	113,482	2.3	113,988	0.4	115,207	1.1
72,781	2.7	75,226	3.4	77,892	3.5	80,589	3.5	82,780	2.7	85,139	2.8	87,548	2.8
30,834		32,469		30,940		30,359		30,702		28,849		27,659	
42.4		43.2		39.7		37.7		37.1		33.9		31.6	
137,858	3.4	139,721	1.4	143,925	3.0	147,357	2.4	151,794	3.0	154,936	2.1	159,068	2.7
100,413	2.8	103,178	2.8	106,052	2.8	109,207	3.0	112,451	3.0	115,913	3.1	119,315	2.9
37,445		36,543		37,873		38,150		39,343		39,023		39,753	
37.3*		35.4		35.7*		34.9		35.0		33.7		33.3	
50,131	5.9	51,236	2.2	52,095	1.7	51,785	0.6 –	51,684	0.2 –	52,644	1.9	52,479	0.3 –
30,807	3.1	31,709	2.9	32,670	3.0	33,614	2.9	34,543	2.8	35,562	2.9	36,532	2.7
19,324		19,527		19,425		18,171		17,141		17,082		15,947	
62.7*		61.6*		59.5*		54.1*		49.6*		48.0*		43.7*	
66,632	4.1	67,961	2.0	67,694	0.4 –	69,879	3.2	72,631	3.9	74,741	2.9	76,249	2.0
37,651	3.9	38,985	3.5	40,286	3.3	41,676	3.5	43,120	3.5	44,625	3.5	46,146	3.4
28,981		28,976		27,408		28,203		29,511		30,116		30,103	
77.0*		74.3*		68.0*		67.7*		68.4*		67.5*		65.2*	
47,538	2.7	49,958	5.1	52,214	4.5	53,915	3.3	57,493	6.6	57,718	0.4	58,798	1.9
29,103	4.3	30,273	4.0	31,718	4.8	33,076	4.3	34,474	4.2	36,090	4.7	37,779	4.7
18,435		19,685		20,496		20,839		23,019		21,628		21,019	
63.3*		65.0*		64.6*		63.0*		66.8*		59.9*		55.6*	
30,087	1.7	30,562	1.6	30,481	0.3 –	31,759	4.2	31,769	0.0	31,877	0.3	33,438	4.9
20,781	3.3	21,434	3.1	22,069	3.0	22,762	3.1	23,482	3.2	24,299	3.5	25,099	3.3
9,306		9,128		8,412		8,997		8,287		7,578		8,339	
44.8*		42.6*		38.1*		39.5*		35.3*		31.2*		33.2*	
116,814	2.4	121,686	4.2	125,378	3.0	128,706	2.7	131,636	2.3	133,467	1.4	136,571	2.3
82,630	3.5	85,880	3.9	88,719	3.3	91,634	3.3	94,032	2.6	96,538	2.7	97,770	1.3
34,184		36,806		36,659		37,072		37,604		36,929		38,801	
41.4*		41.7*		41.3*		40.5*		40.0*		38.3*		39.7*	
659,458	2.7	679,185	3.0	694,214	2.2	709,287	2.2	725,976	2.4	735,003	1.2	749,059	1.9
17,318		19,727		15,029		15,073		16,689		9,027		14,056	
444,671	3.1	458,870	3.2	473,461	3.2	488,473	3.2	502,737	2.9	517,921	3.0	531,794	2.7
13,416		14,199		14,591		15,012		14,264		15,184		13,873	
214,787		220,315		220,753		220,814		223,239		217,082		217,265	
48.3		48.0		46.6		45.2		44.4		41.9		40.9	

Fig. 2 SUMMER PEAK CAPABILITIES, PEAK LOADS, AND CAPABILITY MARGINS
Total Electric Utility Industry of the Contiguous United States

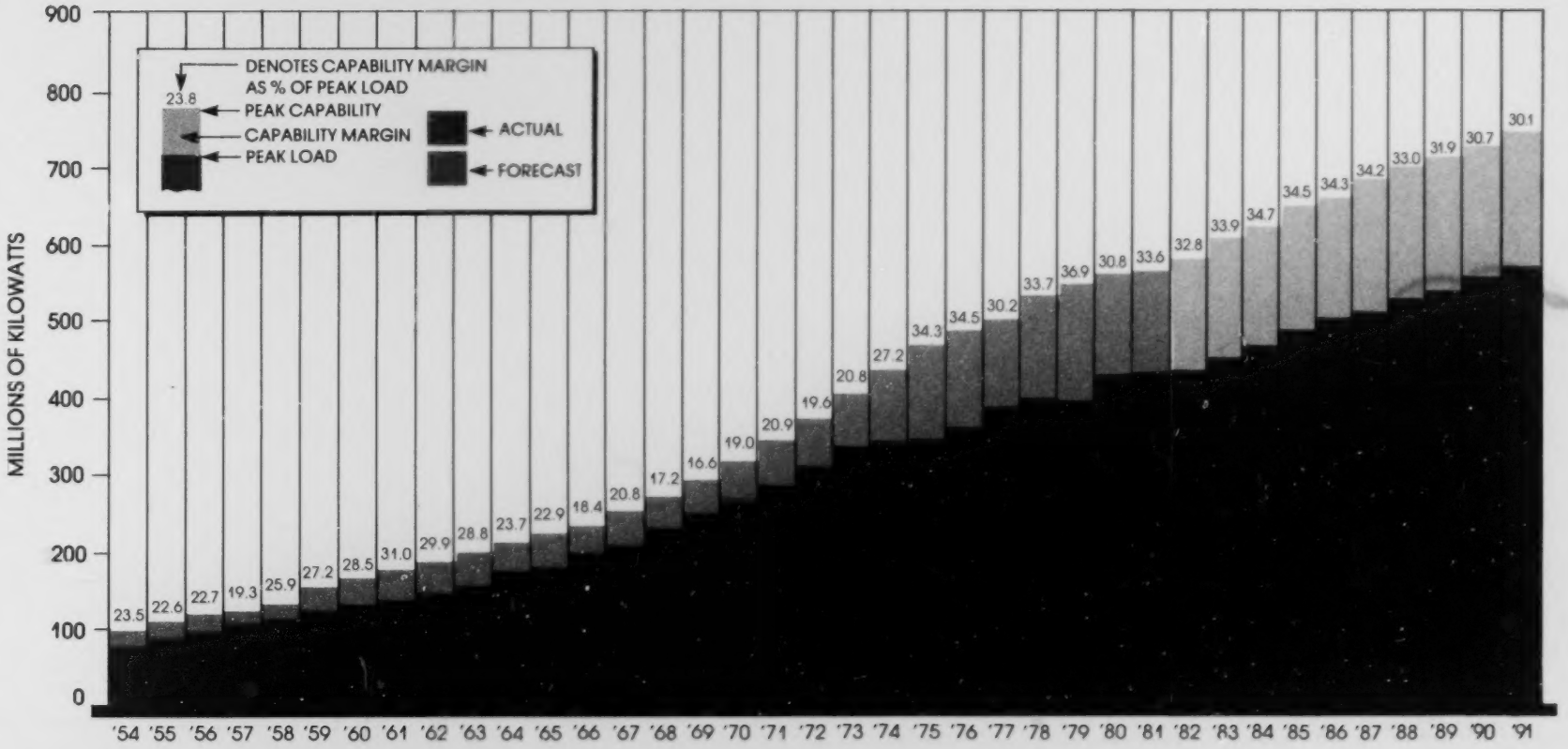
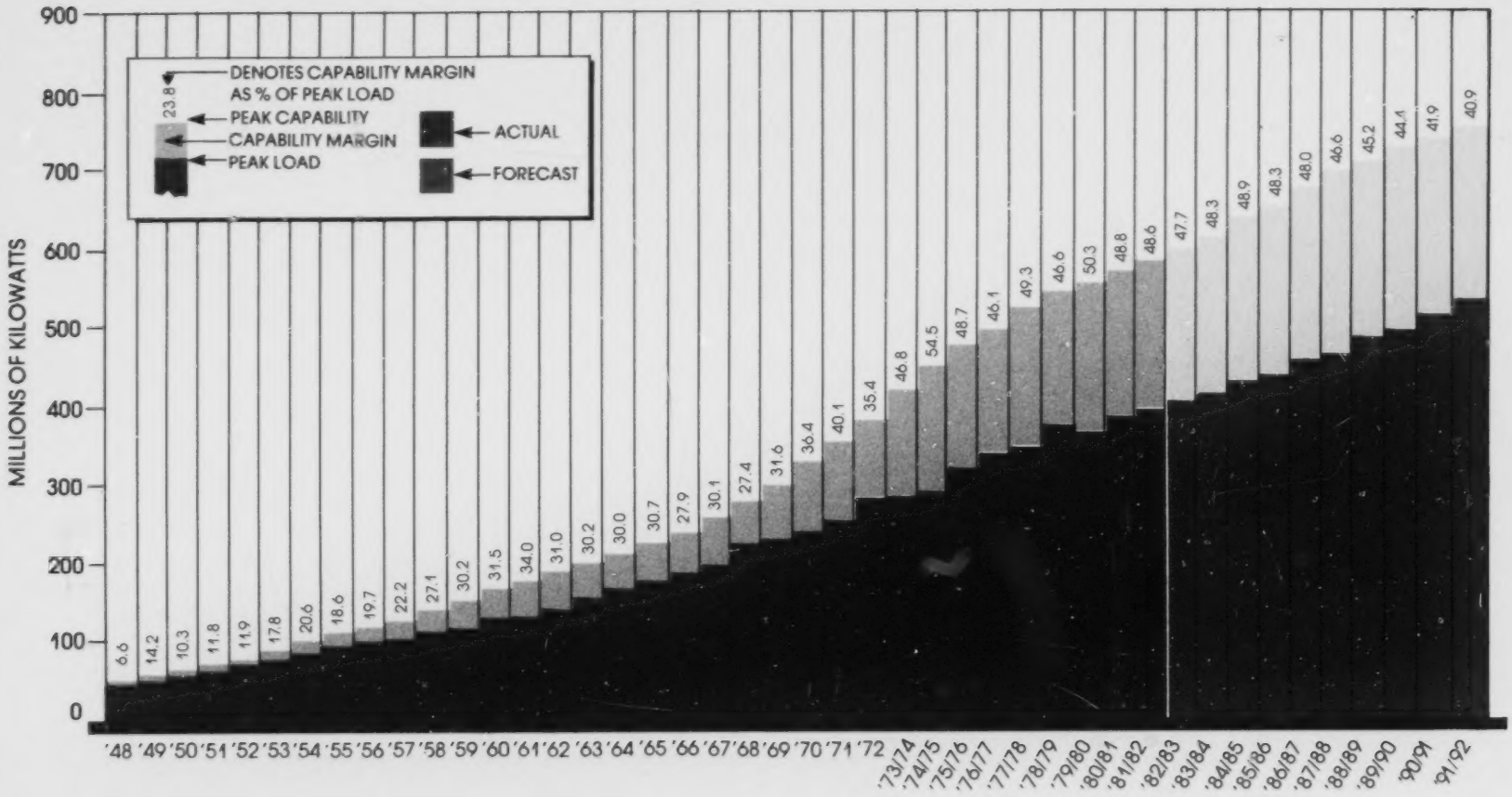


Fig. 3 DECEMBER AND WINTER PEAK CAPABILITIES, PEAK LOADS, AND CAPABILITY MARGINS
Total Electric Utility Industry of the Contiguous United States.



WINTER PEAK CAPABILITIES, PEAK LOADS, AND CAPABILITY MARGINS

WINTER CAPABILITIES

The Annual Electric Power Survey of April 1976 was the first report to show data for the turn-of-the-year, winter season rather than specifically for the month of December. December figures will continue to be shown in Year-End Electric Power Surveys.

The actual winter 1981/82 capability for the sum of the nine regions of the contiguous United States was 581.1 million kilowatts, an increase of 8.9 million kilowatts, or 1.6 percent, above the actual capability at the time of the winter 1980/81 peak.

Winter 1982/83 capability now forecast for the entire electric utility industry under adverse hydro conditions is 596.4 million kilowatts – an increase of 15.3 million kilowatts, or 2.6 percent, over the corresponding winter 1981/82 capability. The new forecasts for 1982/83 through 1990/91 for the nine regions taken together show reduced values, ranging from 1.0 percent to 3.3 percent below the winter capabilities expected for these years twelve months ago.

For winter 1991/1992, shown in these surveys for the first time, the total capability to the industry under adverse hydro conditions is forecast to reach 749.1 million kilowatts. This gives an average annual increase for the ten-year period from winter 1981/82 of 2.6 percent.

The total capability of the electric utility industry of the contiguous United States, given herein annually for winter 1981/82 (581.1 million kilowatts) and projected to winter 1991/92 (749.1 million kilowatts), consists of the following types of equipment in approximately the proportions listed below.

Winter Capability Mix

	1981/82	1991/92
Coal-Fired Steam Turbine-Generators	41.9%	45.6%
Oil-Fired Steam Turbine-Generators	15.0	9.7
Gas-Fired Steam Turbine-Generators	11.1	7.9
Nuclear Steam Turbine-Generators	9.4	16.9
Conventional Hydro Generators	11.3	8.8
Pumped-Storage Generators	2.1	2.5
Combustion Turbine-Generators	8.0	6.3
Combined-Cycle Generators	0.9	0.7
Diesel Engine-Generators and other	0.3	1.6
	100.0%	100.0%

Table VIII summarizes the generating capacity additions placed in commercial operation during the first three months of 1982, with the exception of combined-cycle generators, according to the same equipment type classifications as contained in the Capability Mix table. Table IX shows similar data for all scheduled generating additions through 1988 and later.

With December representing winter for the years 1948 through 1972, for the 44-year period shown by the chart in Fig. 3, page 11, for the contiguous United States, the total increase in capability is 694.6 million kilowatts, giving an average annual increase for the entire period of 6.3 percent.

WINTER PEAK LOADS

According to actual operating records now available, the winter 1981/82 peak load for the sum of the nine regions of the contiguous United States was 391.1 million kilowatts – 6.5 million kilowatts, or 1.7 percent, above the winter 1980/81 peak load.

As now forecast, the winter 1982/83 peak load for the country will reach 403.8 million kilowatts, an increase of 3.2 percent over the winter 1981/82 peak load. For winter 1991/92, shown in these surveys for the first time, the forecast peak load is 531.8 million kilowatts. This represents an average annual increase during the ten-year period from winter 1981/82 of 3.1 percent.

WINTER CAPABILITY MARGINS

Compared with winter capability margins forecast one year ago, regional winter margins reported in this survey are generally higher for NPCC, ECAR, MAIN, SPP, MAPP and WSCC, lower for MAAC, SERC and ERCOT. For the country as a whole, capability margins are now forecast to range from 48.9 percent for the winter of 1984/85 to 40.9 percent for 1991/92, shown in these surveys for the first time.

RELATIONSHIP BETWEEN SUMMER AND WINTER PEAK LOADS

The relationship between the summer and winter peak loads in the different regions of the country, and also for the contiguous United States, are shown in Table III, where the summer peak load in each case is expressed as a percentage of the winter peak load for the following season.

In those regions where the summer peak load has been characteristically higher then the peak during the following winter, the percentage figure has, expectedly, been above 100 percent. This has been true in particular in SPP and ERCOT, where, due to climatic conditions, heavy air conditioning loads during the summer months have caused peaks that far exceed those during the following winter.

In these regions it has not been possible to develop electric heating loads during the winter months to offset the heavy air conditioning load in summer.

From the 1950s through the early 1970s there was a gradual trend in most regions for the summer peak load to approach and then exceed the peak of the following winter. The last year in which the country as a whole experienced a summer peak that was about the same as the winter peak load was 1963. During the years 1964 through 1971, there was a departure from the equality of summer and winter peaks experienced in the early 1960s. Since 1964 summer peaks have generally exceeded the peaks for the following winter by increasing amounts. In 1970, and again in 1971, apparently normal summer peaks were followed by winter peaks depressed both by mild weather and reduced industrial loads. This combination produced summer to winter peak relationships of 111 percent and 112 percent respectively in 1970 and 1971.

After falling back to 110 percent in 1972, the summer/winter ratio jumped to a high of 119 percent in 1973 because of the unprecedented drop in the winter peak load from the year previous. The ratio lowered only one point in 1974 since both the summer and winter peak loads were little changed from those experienced in 1973. The relationship between the summer and winter peaks dropped back to more normal values of 108 percent and 106 percent, respectively, in 1975 and 1976. This was followed by a rise to 110 percent in 1977, a decline to 107 percent in 1978, and an uptick to 108 percent in 1979. The hot summer of 1980 and the economic downturn of 1981 helped to produce values of 111 and 110 respectively. The forecast now projects 109 percent for 1982 and a constant 108 percent form 1983 to 1986, followed by a five-year plateau at 107 percent through 1991.

Table III SUMMER PEAK LOADS EXPRESSED AS PERCENTAGE OF PEAK LOAD FOR THE FOLLOWING WINTER

	ACTUAL								FORECAST									
Regions	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92
NPCC	104	102	96	105	102	100	104	101	101	102	101	101	101	101	101	100	100	100
MAAC	123	114	108	115	111	114	116	113	113	112	111	110	109	108	107	106	106	105
ECAR	105	102	97	101	99	104	101	103	99	98	99	99	99	98	98	99	99	98
SERC	109	100	93	99	99	101	99	98	99	101	100	100	100	100	100	100	100	100
MAIN	125	119	122	122	118	123	127	121	122	121	121	120	119	118	117	116	115	115
SPP	156	124	144	144	138	133	147	139	135	135	135	135	135	135	135	134	134	133
ERCOT	157	141	142	148	134	130	132	131	133	133	132	132	133	132	132	132	131	130
MAPP	119	106	103	111	111	105	111	108	111	112	111	112	112	112	112	112	111	111
WSCC	107	104	107	105	98	100	107	111	104	103	103	102	101	101	101	101	101	102
Total Electric Utility Industry of the Contiguous United States	116	108	106	110	107	108	111	110	109	108	108	108	108	107	107	107	107	107

KILOWATT-HOUR REQUIREMENTS AND ANNUAL LOAD FACTORS

Calendar-year kilowatt-hour requirements by region and for the total of the lower forty-eight states are shown in Table IV. The corresponding annual load factors are given in Table V. The kilowatt-hour requirement represents utility generation plus kilowatt-hours received from all outside sources, including net imports from other countries and energy from certain industrial installations which are interconnected and coordinated with the utility systems.

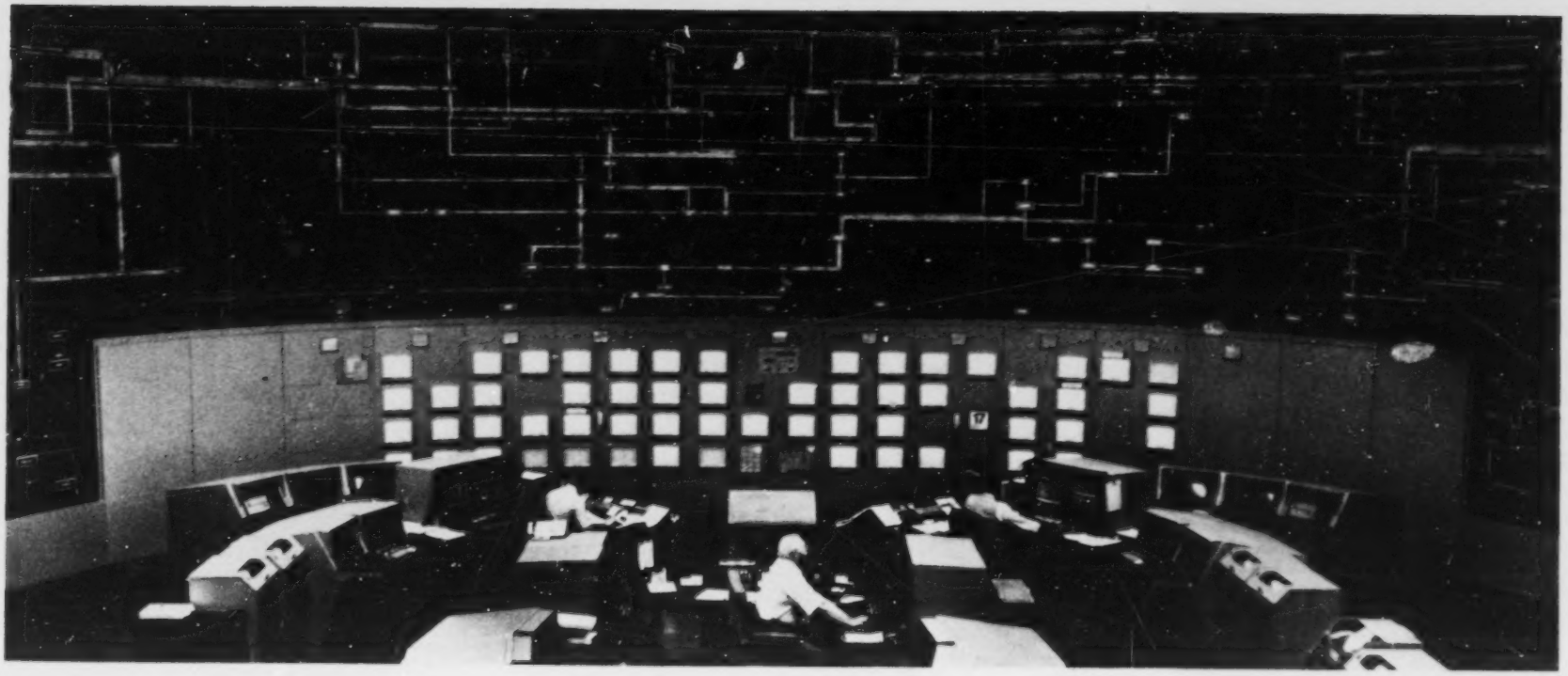
The present forecasts of kilowatt-hour requirements for the contiguous United States for the years 1982 through 1990 range between 1.8 and 4.6 percent below the values predicted in the previous survey of April 1, 1981. For 1991, shown in these surveys for the first time, the projected kilowatt-hour requirement is 3.2 trillion kilowatt-hours. The average annual increase in kilowatt-hour requirements during the ten-year period 1982 through 1991, according to present forecasts, is 3.3 percent.

Fig. 4, Page 17, is a bar chart showing the total annual kilowatt-hour requirements for the entire industry, starting with the year 1948 and including the forecasts for the years 1982 through 1991. Annual load factors are printed at the top of each bar. The average annual increase in kwhr requirements for the entire period shown in Fig. 4 is 5.9 percent.

Table IV ANNUAL KILOWATT-HOUR REQUIREMENTS – MILLIONS as of April 1, 1982

Regions	1980*	1981*	% Inc	1982	% Inc	1983	% Inc	1984	% Inc	1985	% Inc
NPCC	203,954	202,620	0.7 –	204,162	0.8	207,797	1.8	210,979	1.5	215,185	2.0
MAAC	175,622	174,668	0.5 –	179,755	2.9	184,068	2.4	188,929	2.6	194,024	2.7
ECAR	366,198	366,376	0.0	378,400	3.3	398,000	5.2	420,200	5.6	430,900	2.5
SERC	479,715	483,595	0.8	494,344	2.2	514,651	4.1	535,974	4.1	554,564	3.5
MAIN	166,116	162,899	1.9 –	168,211	3.3	172,611	2.6	177,625	2.9	182,550	2.8
SPP	213,381	211,833	0.7 –	220,708	4.2	230,076	4.2	238,468	3.6	247,445	3.8
ERCOT	162,327	164,920	1.6	174,924	6.1	183,331	4.8	192,376	4.9	201,015	4.5
MAPP	96,422	96,307	0.1 –	102,039	6.0	107,627	5.5	112,062	4.1	117,638	5.0
WSCC	428,983	447,788	4.4	462,659	3.3	473,005	2.2	485,527	2.6	505,248	4.1
Survey Totals for the Nine Regions	2,292,718	2,311,006	0.8	2,385,202	3.2	2,471,166	3.6	2,562,140	3.7	2,648,569	3.4
Annual Increase		18,288		74,196		85,964		90,974		86,429	

*Actual

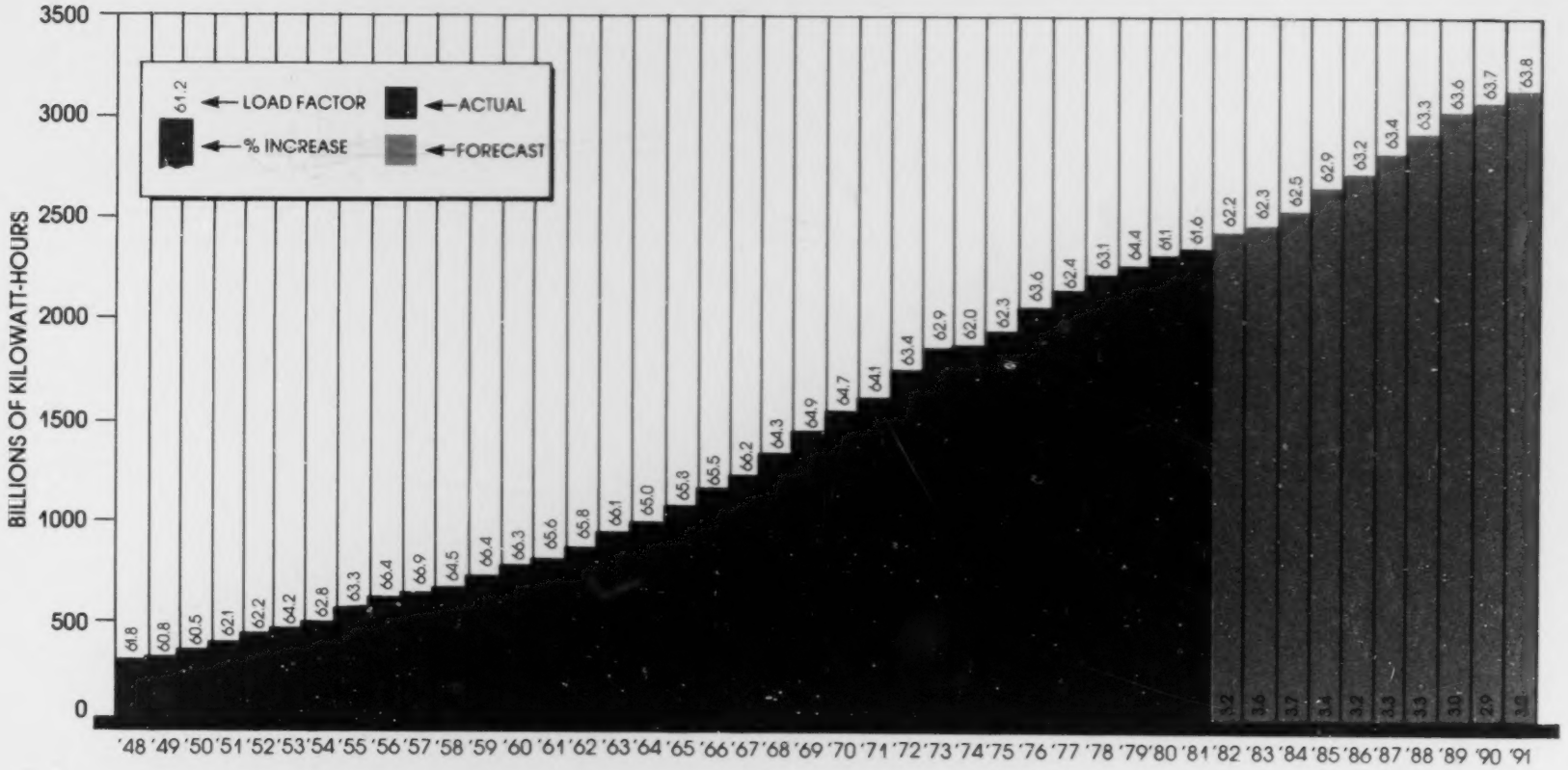


1986	% Inc	1987	% Inc	1988	% Inc	1989	% Inc	1990	% Inc	1991	% Inc
220,242	2.4	226,025	2.6	231,387	2.4	236,874	2.4	242,099	2.2	247,321	2.2
198,744	2.4	203,051	2.2	207,868	2.4	212,687	2.3	217,394	2.2	222,013	2.1
444,800	3.2	458,700	3.1	475,000	3.6	489,600	3.1	501,700	2.5	514,900	2.6
570,753	2.9	588,567	3.1	607,444	3.2	625,620	3.0	645,529	3.2	666,750	3.3
187,374	2.6	193,177	3.1	197,876	2.4	203,137	2.7	208,435	2.6	214,271	2.8
256,588	3.7	265,512	3.5	274,972	3.6	283,404	3.1	293,014	3.4	302,951	3.4
209,702	4.3	218,824	4.3	227,581	4.0	237,367	4.3	247,472	4.3	258,166	4.3
122,090	3.8	126,276	3.4	130,534	3.4	134,738	3.2	139,288	3.4	144,026	3.4
523,460	3.6	543,132	3.8	562,406	3.5	578,204	2.8	593,708	2.7	610,549	2.8
2,733,753	3.2	2,823,264	3.3	2,915,068	3.3	3,001,631	3.0	3,088,639	2.9	3,180,947	3.0
82,730		89,511		91,804		86,554		87,017		92,308	

Table V ANNUAL LOAD FACTORS, %

	ACTUAL		FORECAST									
Regions	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
NPCC	63.0	64.9	65.2	65.2	65.1	65.4	65.6	65.8	65.8	66.1	66.3	66.4
MAAC	57.9	59.3	59.5	59.7	59.9	60.4	60.7	61.1	61.2	61.6	61.7	61.9
ECAR	66.2	65.2	66.2	66.2	67.5	67.6	67.5	67.2	67.1	67.5	67.3	67.1
SERC	60.4	59.1	61.2	61.7	62.4	63.0	63.1	63.4	63.3	63.5	63.6	63.8
MAIN	55.8	57.0	56.0	56.1	56.1	56.5	56.9	57.4	57.4	57.8	58.0	58.4
SPP	54.0	54.2	55.7	55.7	55.6	55.7	55.8	55.8	55.8	55.9	56.0	56.2
ERCOT	58.3	57.9	58.7	59.1	59.6	59.6	59.6	59.6	59.3	59.5	59.8	59.8
MAPP	56.6	57.9	56.9	57.4	57.2	57.8	58.2	58.4	58.4	58.7	58.9	59.1
WSCC	67.0	67.6	67.7	67.9	67.5	68.4	68.8	69.2	69.3	69.5	69.5	69.7
Survey Totals for the Nine Regions	61.1	61.6	62.2	62.3	62.5	62.9	63.2	63.4	63.3	63.6	63.7	63.8

Fig. 4 ANNUAL KILOWATT-HOUR REQUIREMENTS AND ANNUAL LOAD FACTORS
Total Electric Utility Industry of the Contiguous United States



COMPARISON WITH PREVIOUS FUEL SURVEY

Comparison of 1982-90 Kilowatt-Hour Projections by Source, Fuels and Hydro, in April 1981 and April 1982 Electric Power Surveys

The expected relative percent share of total net generation for coal has increased from 51.8 to 52.9 percent for 1982, increased from 51.8 to 53.0 percent for 1983, and at 51.5 percent of total in 1987 is four-tenths percentage points higher than in the April 1981 Survey. Shown for the first time in these surveys, the expected percent share for coal in 1991 is 53.8 percent.

While the percent share of generation accounted for by gas has a downward trend similar to that forecast a year ago, the annual percentages now start from a higher point. Projected percent share for gas for 1982 has been increased from 12.3 to 14.1 percent, has risen from 10.8 to 12.4 percent for 1983, and has gone up from 8.3 to 9.0 percent for 1987. A decline to 6.9 percent is shown by 1991.

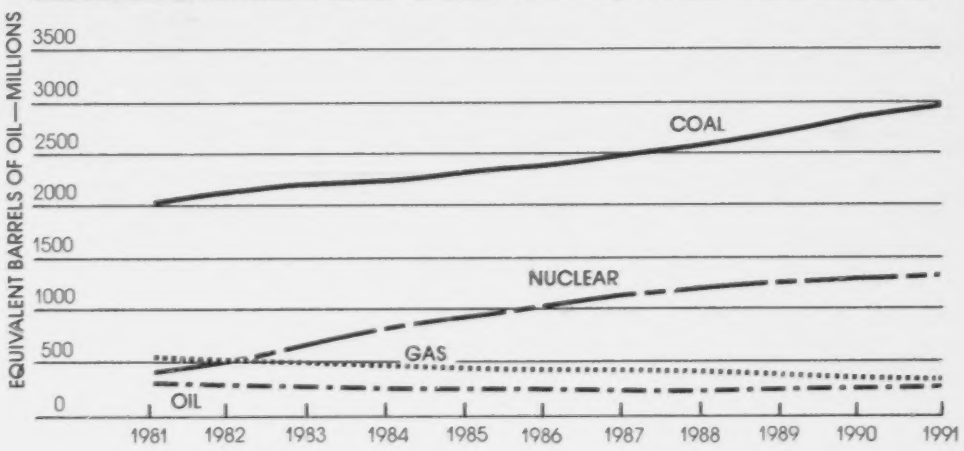
Projected percent share for oil dropped from 9.9 to 7.9 percent for 1982, declined from 8.9 to 6.9 percent for 1983, and has been reduced from 7.1 to 5.1 percent for 1987. A drop to 4.9 percent is shown for 1991. These lower shares of total generation expected from oil derive at least partially from the greater availability of gas now forecast, compared to a year ago.

The new projections of generation from nuclear sources for the period 1982-90 are all reduced from those forecast one year ago. The expectation for the 1982 share has dropped from 15.8 to 13.6 percent, from 18.0 to 16.3 percent for 1983, and from 23.9 to 23.6 percent for 1987. Nuclear is now forecast to account for 24.4 percent of total net generation by 1991.

While increasing slightly over the period in terms of actual kilowatt-hours generated, hydro is expected to account for 10.8 percent of total net generation in 1982 and drop to 8.9 percent by 1991.

During the period 1982-1991, generation from other sources ranges from 1.3 to 2.0 percent and pumping energy deductions range between 0.6 and 0.8 percent.

FUEL REQUIREMENTS FOR ELECTRIC GENERATION (Expressed in Oil Equivalents)



GENERATION BY SOURCE, FUELS AND HYDRO

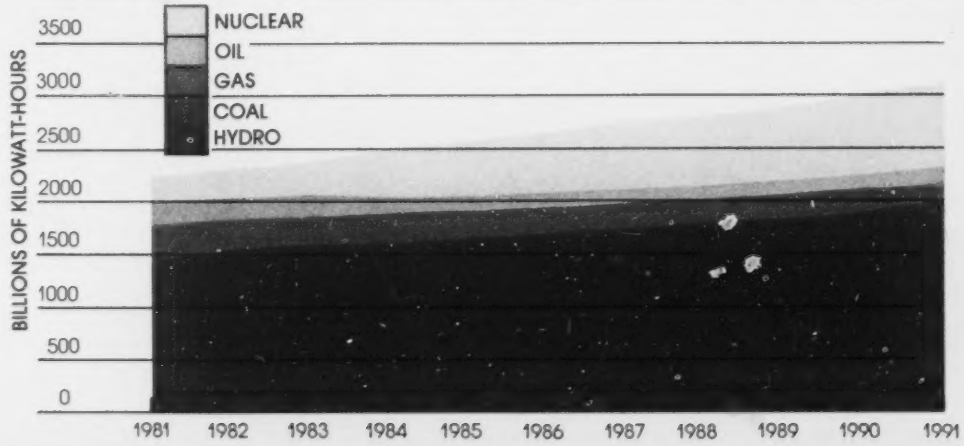


Table VI – FOSSIL FUEL REQUIREMENTS FOR ELECTRIC GENERATION IN PHYSICAL UNITS, CONTIGUOUS U.S.

	1981 Actual	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
GROSS COAL REQUIREMENTS IN PHYSICAL UNITS – (Thousands of Tons)											
NPCC	10,283	13,860	16,140	15,940	19,520	22,410	23,960	25,810	26,910	28,410	29,500
MAAC	34,564	37,405	36,901	39,219	39,745	39,912	38,661	38,709	39,323	39,908	41,858
ECAR	153,436	156,654	162,802	162,668	162,378	167,127	168,665	172,189	176,097	178,816	184,068
SERC	122,559	121,600	124,682	122,421	130,655	131,949	135,191	137,189	142,039	146,062	149,782
MAIN	56,773	59,889	59,344	56,161	56,367	55,447	57,753	56,878	59,551	61,397	62,292
SPP	46,465	54,087	63,416	66,733	72,880	76,098	80,967	85,275	89,033	99,189	106,643
ERCOT	43,429	45,581	48,466	50,350	50,244	53,748	59,901	65,918	75,710	86,365	94,529
MAPP	44,476	47,072	50,937	54,526	57,776	60,994	63,050	65,205	67,875	70,052	73,479
WSCC	69,138	76,851	79,363	79,839	82,735	86,347	90,518	97,688	105,042	113,134	120,813
TOTAL	581,123	612,999	642,051	647,857	672,300	694,032	718,666	744,861	781,580	823,333	862,964
GROSS OIL REQUIREMENTS IN PHYSICAL UNITS – (Thousands of Barrels)											
NPCC	131,256	125,550	114,290	109,660	99,550	86,250	65,320	65,480	69,750	70,940	76,710
MAAC	42,150	36,318	29,372	18,896	18,870	22,516	19,217	15,283	19,287	19,421	20,070
ECAR	9,529	12,063	12,551	13,172	13,172	13,172	13,172	13,172	13,172	13,172	13,110
SERC	87,281	83,109	70,450	63,786	47,897	49,214	55,975	57,280	66,365	67,391	66,938
MAIN	10,609	6,158	7,360	6,398	4,833	3,828	4,643	4,591	6,202	7,494	8,303
SPP	8,721	3,261	4,294	6,304	8,900	17,100	22,069	19,630	19,504	18,433	17,584
ERCOT	1,060	2,171	4,260	4,546	5,641	3,130	4,144	13,106	9,892	4,032	10,239
MAPP	536	1,620	524	801	1,134	1,102	1,271	1,183	1,323	1,616	1,544
WSCC	45,573	51,795	51,687	50,387	56,075	62,221	59,796	54,338	49,457	55,150	52,892
TOTAL	336,715	324,045	294,788	273,950	256,072	258,533	245,607	244,063	254,952	257,649	267,390
GROSS GAS REQUIREMENTS IN PHYSICAL UNITS – (Millions of Cubic Feet)											
NPCC	142,614	105,235	82,445	41,174	36,840	10,153	6,500	–	–	–	–
MAAC	90,105	60,932	47,521	23,327	16,259	13,953	13,118	12,207	12,641	12,059	11,999
ECAR	10,206	9,759	8,786	8,786	8,786	8,786	8,786	8,786	8,786	8,786	8,786
SERC	194,701	161,751	147,546	139,758	138,938	134,065	122,923	99,125	47,658	46,453	43,683
MAIN	16,264	14,894	13,313	9,690	5,119	3,153	3,143	2,777	3,655	4,845	3,102
SPP	1,212,240	1,092,771	965,584	927,996	824,454	809,409	791,510	752,180	746,162	723,717	726,494
ERCOT	1,054,126	1,110,392	1,148,196	1,162,433	1,202,370	1,194,222	1,154,358	1,103,252	1,067,086	1,059,680	1,007,953
MAPP	7,533	2,127	1,345	1,681	1,679	2,039	2,299	2,173	1,391	1,994	1,860
WSCC	768,028	829,306	653,055	554,684	518,837	449,701	432,128	443,855	446,674	392,793	386,657
TOTAL	3,495,817	3,387,167	3,067,791	2,869,529	2,753,282	2,625,481	2,534,765	2,424,355	2,334,053	2,250,327	2,190,534

Table VII – NET GENERATION BY SOURCE, FUELS AND HYDRO – MILLIONS OF KILOWATT-HOURS

	1981 Actual	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
NPCC											
Coal	24,005	33,370	39,390	39,045	48,280	55,455	59,090	63,839	66,120	69,873	72,164
Oil	77,856	73,975	67,094	63,748	57,534	50,208	38,058	38,654	41,101	41,625	44,796
Gas	17,457	9,595	7,487	3,725	3,324	882	546	–	–	–	–
Nuclear	43,246	48,928	54,950	57,990	59,690	67,530	79,397	80,273	80,875	82,201	82,201
Hydro, adverse conditions	34,464	29,075	29,370	29,755	30,019	30,499	30,536	31,432	31,349	31,443	31,256
Other	42	60	180	215	435	535	535	776	1,115	1,115	1,115
Pumping Energy (deduct)	4,863 –	2,937 –	3,160 –	3,445 –	3,793 –	4,443 –	4,453 –	5,343 –	5,122 –	5,254 –	4,997 –
Total Net Generation	192,207	192,066	195,311	191,033	195,489	200,666	203,709	209,631	215,438	221,003	226,535
MAAC											
Coal	83,247	91,783	90,660	95,795	96,981	97,399	94,111	91,317	95,869	97,458	102,446
Oil	22,297	18,955	14,897	10,333	10,188	11,796	10,223	8,037	10,318	10,371	10,653
Gas	7,982	6,980	6,308	2,574	2,140	2,250	1,995	1,880	1,927	1,906	1,975
Nuclear	32,847	35,161	51,808	56,318	62,816	67,835	78,453	86,264	86,651	89,723	89,036
Hydro, adverse conditions	4,635	4,895	5,147	5,572	5,683	5,960	6,106	6,070	6,010	6,131	6,087
Other	1,017	1,040	1,041	1,027	1,469	1,645	1,028	838	835	835	835
Pumping Energy (deduct)	2,357 –	1,876 –	2,233 –	2,843 –	2,953 –	3,123 –	3,270 –	3,223 –	3,123 –	3,306 –	3,244 –
Total Net Generation	149,668	156,938	167,628	168,776	176,324	183,762	188,646	194,183	198,487	203,118	207,788
ECAR											
Coal	347,584	348,121	361,783	361,484	360,841	371,394	374,811	382,642	391,326	397,368	409,041
Oil	4,075	6,301	6,581	6,935	6,935	6,935	6,935	6,935	6,935	6,935	6,893
Gas	1,231	691	694	594	594	594	594	594	594	594	594
Nuclear	26,460	26,491	28,965	49,983	61,111	64,645	75,316	83,104	88,340	94,403	95,976
Hydro, adverse conditions	3,722	4,698	4,855	4,855	4,855	5,223	5,591	5,591	5,591	5,591	5,591
Other	–	–	–	–	–	–	–	–	–	–	–
Pumping Energy (deduct)	2,203 –	3,659 –	3,659 –	3,659 –	3,659 –	4,211 –	4,763 –	4,763 –	4,763 –	4,763 –	4,763 –
Total Net Generation	380,869	382,643	399,219	420,192	430,677	444,580	458,484	474,103	488,023	500,128	513,332
SERC											
Coal	285,949	291,156	304,300	306,587	324,757	332,121	339,377	341,329	352,674	361,323	369,062
Oil	52,245	48,816	40,460	35,843	27,447	28,269	29,566	31,267	37,362	38,001	37,912
Gas	17,099	14,617	14,594	14,149	13,510	14,317	12,839	9,980	3,564	3,591	3,382
Nuclear	91,385	107,707	131,662	153,709	164,476	174,127	182,205	198,501	206,368	216,676	230,013
Hydro, adverse conditions	24,097	33,685	33,890	34,265	34,338	35,639	39,849	40,183	39,702	40,702	41,355
Other	739	660	590	895	986	1,319	565	678	1,379	2,052	2,527
Pumping Energy (deduct)	3,787 –	3,573 –	3,605 –	3,900 –	3,518 –	5,052 –	7,569 –	7,970 –	7,405 –	8,743 –	9,621 –
Total Net Generation	467,727	493,068	521,891	541,548	561,996	580,740	596,832	613,988	633,644	653,602	674,630
MAIN											
Coal	108,457	115,815	114,378	108,458	107,795	106,637	109,595	108,212	113,442	119,002	121,261
Oil	5,498	4,176	3,654	3,333	2,525	1,901	2,271	2,217	3,061	3,738	4,118
Gas	1,150	1,079	1,066	692	383	285	321	301	360	442	349
Nuclear	37,192	39,411	47,275	64,269	71,343	77,827	79,753	84,217	81,875	81,287	83,990
Hydro, adverse conditions	2,333	2,304	2,307	2,335	2,338	2,348	2,375	2,368	2,372	2,356	2,354
Other	532	445	437	511	577	665	687	758	816	805	885
Pumping Energy (deduct)	34 –	119 –	125 –	167 –	156 –	185 –	241 –	232 –	242 –	199 –	190 –
Total Net Generation	155,128	163,111	168,992	179,431	184,805	189,439	194,761	197,841	201,684	207,431	212,767

Table VII – NET GENERATION BY SOURCE, FUELS AND HYDRO – MILLIONS OF KILOWATT-HOURS

	1981 Actual	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
SPP											
Coal	78,974	90,115	105,478	108,917	117,483	122,101	176,254	133,283	141,147	153,434	165,874
Oil	5,239	1,960	2,565	3,736	5,296	10,329	14,093	12,822	12,480	11,923	10,990
Gas	113,499	107,914	95,595	92,433	82,463	81,074	80,355	71,899	74,761	72,436	72,440
Nuclear	9,188	11,978	19,391	24,596	27,145	30,013	32,402	36,070	38,552	40,027	39,310
Hydro, adverse conditions	3,040	5,950	5,950	5,998	6,106	6,106	6,106	6,107	6,107	6,107	6,106
Other	967	902	902	923	924	924	914	1,971	1,982	2,024	1,925
Pumping Energy (deduct)	181 –	426 –	426 –	426 –	426 –	426 –	426 –	426 –	426 –	426 –	426 –
Total Net Generation	210,726	218,393	229,455	236,177	238,991	250,121	259,698	261,726	274,603	285,525	296,219
ERCOT											
Coal	59,436	62,168	65,835	67,893	67,575	72,112	79,621	86,255	96,276	108,076	119,577
Oil	493	1,088	2,182	2,463	3,066	1,680	2,243	7,122	5,280	2,129	5,165
Gas	102,956	108,064	111,418	113,165	116,561	115,442	111,953	107,349	104,071	103,010	97,983
Nuclear	–	–	–	5,310	9,229	15,758	21,528	23,344	27,456	29,055	29,110
Hydro, adverse conditions	501	303	303	303	303	303	303	303	303	303	303
Other	–	–	–	–	–	–	–	–	–	–	–
Pumping Energy (deduct)	–	–	–	–	–	–	–	–	–	–	–
Total Net Generation	163,386	171,623	179,738	189,134	196,734	205,295	215,648	224,373	233,386	242,573	252,138
MAPP											
Coal	65,908	69,115	74,847	79,498	83,938	88,649	91,904	94,643	98,384	101,235	105,824
Oil	169	159	155	172	237	252	353	310	377	513	486
Gas	546	181	111	137	136	172	193	184	114	170	155
Nuclear	21,030	25,275	25,795	25,156	25,398	25,427	24,293	24,777	25,796	24,634	24,461
Hydro, adverse conditions	12,907	12,885	13,389	13,795	14,044	14,307	14,303	14,424	14,548	14,673	14,804
Other	–	–	–	–	–	–	–	–	–	–	–
Pumping Energy (deduct)	–	–	–	–	–	–	–	–	–	–	–
Total Net Generation	100,560	107,615	114,297	118,758	123,753	128,807	131,046	134,338	139,219	141,225	145,730
WSCC											
Coal	123,923	139,303	142,980	144,017	149,233	155,443	163,873	178,194	190,341	207,114	221,314
Oil	27,805	29,524	30,333	29,481	32,693	36,783	35,368	32,339	28,628	32,793	31,452
Gas	79,319	81,702	65,943	56,582	52,738	45,218	43,481	44,545	45,809	39,682	38,982
Nuclear	12,637	24,657	39,655	56,439	61,690	71,936	85,521	86,782	88,674	88,786	91,628
Hydro, adverse conditions	186,116	160,094	163,455	165,722	166,844	168,439	166,401	170,253	170,867	173,495	171,963
Other	11,516	27,999	31,591	34,602	41,172	43,650	46,143	48,052	51,766	49,897	53,316
Pumping Egergy (deduct)	1,484 –	1,142 –	1,194 –	1,316 –	1,534 –	1,588 –	1,793 –	1,900 –	2,019 –	2,197 –	2,244 –
Total Net Generation	439,832	462,137	472,763	485,527	502,836	519,881	538,994	558,265	574,066	589,570	606,411
TOTAL											
Coal	1,177,483	1,240,946	1,299,651	1,311,694	1,356,883	1,401,311	1,438,636	1,482,714	1,545,579	1,614,883	1,686,563
Oil	195,677	184,954	167,921	156,044	145,921	148,153	139,110	139,723	145,542	148,028	152,465
Gas	341,239	330,823	303,216	284,051	271,849	260,234	252,277	236,732	231,200	221,831	215,860
Nuclear	273,985	319,608	399,501	493,770	542,898	595,098	658,868	703,332	724,587	746,792	765,725
Hydro, adverse conditions	271,815	253,889	258,666	262,600	264,530	268,824	271,570	276,731	276,849	280,801	279,819
Other	14,813	31,106	34,741	38,173	45,563	48,699	49,872	53,073	57,893	56,728	60,603
Pumping Energy (deduct)	14,909 –	13,732 –	14,402 –	15,756 –	16,039 –	19,026 –	22,515 –	23,857 –	23,100 –	24,868 –	25,485 –
Total Net Generation (Contiguous U.S.)	2,260,103	2,347,594	2,449,294	2,530,576	2,611,605	2,703,291	2,787,818	2,868,448	2,958,550	3,044,175	3,135,550
PERCENTAGE BY SOURCE											
Coal	52.1%	52.9%	53.0%	51.8%	52.0%	51.8%	51.6%	51.7%	52.2%	53.0%	53.8%
Oil	8.7	7.9	6.9	6.2	5.6	5.5	5.1	4.9	4.9	4.9	4.9
Gas	15.1	14.1	12.4	11.2	10.4	9.7	9.0	8.3	7.8	7.3	6.9
Nuclear	12.1	13.6	16.3	19.5	20.8	22.0	23.6	24.4	24.5	24.5	24.4
Hydro, adverse conditions	12.0	10.8	10.6	10.4	10.1	9.9	9.7	9.6	9.4	9.2	8.9
Other	0.7	1.3	1.4	1.5	1.7	1.8	1.8	1.9	2.0	1.9	1.9
Pumping Energy (deduct)	0.7 –	0.6 –	0.6 –	0.6 –	0.6 –	0.7 –	0.8 –	0.8 –	0.8 –	0.8 –	0.8 –
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

ADDITIONS TO ELECTRIC GENERATING CAPACITY

The number and aggregate capacity of new electric generating units placed in commercial operation during the first three months of 1982 are shown in the top portion of Table VIII. The distribution of these units among the nine reliability councils of the United States is indicated in the second portion of the table, while the third portion of the table presents the same data classified according to ownership.

Table IX presents the number and aggregate capacity of all new electric generating capacity on order, as of April 1, 1982, and scheduled for commercial operation during the last nine months of 1982 and later years. The second portion of the table presents this same information on the basis of the reliability councils in which the new capacity is to be installed, and the third portion of the table classifies the information according to ownership.

Tables VIII and IX include all steam turbine-generators, for both fossil and nuclear-fueled units, conventional hydraulic turbine-generators and those for pumped-storage plants, combustion turbine-generators, and diesel engine-generators, 4,000 kw and larger, of both domestic and foreign manufacture.

Table VIII ADDITIONS TO ELECTRIC GENERATING CAPACITY DURING FIRST 3 MONTHS 1982
In Terms of Manufacturers Ratings of the Units

	Thermal								Hydraulic					
	Steam Turbine-Generators				Combustion Turbine-Generators		Diesel Engine-Generators							
	Conventional		Nuclear						Conventional		Pumped-Storage		Total	
	Number of Units	Kw	Number of Units	Kw	Number of Units	Kw	Number of Units	Kw	Number of Units	Kw	Number of Units	Kw	Number of Units	Kw
ADDITIONS FIRST 3 MONTHS 1982	5	2,433,318	–	–	–	–	–	–	4	116,600	–	–	9	2,549,918
ADDITIONS BY REGION														
NPCC	–	–	–	–	–	–	–	–	1	12,600	–	–	1	12,600
MAAC	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ECAR	–	–	–	–	–	–	–	–	–	–	–	–	–	–
SERC	1	818,000	–	–	–	–	–	–	–	–	–	–	1	818,000
MAIN	–	–	–	–	–	–	–	–	–	–	–	–	–	–
SPP	1	512,000	–	–	–	–	–	–	–	–	–	–	1	512,000
ERCOT	1	410,000	–	–	–	–	–	–	–	–	–	–	1	410,000
MAPP	2	693,318	–	–	–	–	–	–	–	–	–	–	2	693,318
WSCC	–	–	–	–	–	–	–	–	3	104,000	–	–	3	104,000
ADDITIONS BY OWNERSHIP														
Investor-Owned	2	1,330,000	–	–	–	–	–	–	1	12,600	–	–	3	1,342,600
Federal	–	–	–	–	–	–	–	–	1	66,500	–	–	1	66,500
Municipal	1	65,000	–	–	–	–	–	–	2	37,500	–	–	3	102,500
Cooperative	1	410,000	–	–	–	–	–	–	–	–	–	–	1	410,000
State and Local	1	628,318	–	–	–	–	–	–	–	–	–	–	1	628,318

Another 68 units totaling 54 million kilowatts are also on order but have not been included in Table IX because the units are either awaiting their first assignment of a scheduled date of commercial operation by the utility systems, or were once scheduled and have since been removed from the expansion program. It is probable that the majority of the orders in the second category (being held open as options by the manufacturers) will not be reactivated.

The accompanying Table X shows the number and aggregate capacity of thermal generating units in the expansion program (Table IX) divided according to size range. It is significant to note from this tabulation that 99 units totaling 102.4 million kilowatts, or 65.9 percent of all the new thermal generating capacity on order and scheduled for service as of April 1, 1982, are in unit sizes of 700,000 kw and larger.

In sizes of 500,000 kw and larger, the aggregate capacity represents 10.8 percent of the total capacity shown.

Among the units under 100,000 kw, there are nine steam turbine-generators with an aggregate capacity of 418 mw, 7 combustion turbine-generators, aggregating 546 mw, and two diesel engine-generators, 4,000 kw and larger, totaling 11 mw.

The number and aggregate capacity of new thermal and hydraulic generating units 4,000 kw and larger, placed in commercial operation in the contiguous United States during the years 1970 through 1981, and those now scheduled for operation in 1982 and later years, including those placed in commercial operation during the first three months of 1982, are shown in Fig. 5.

Table IX SCHEDULED ADDITIONS TO ELECTRIC GENERATING CAPACITY BASED ON SCHEDULED DATES OF COMMERCIAL OPERATION AS OF APRIL 1, 1982 In Terms of Manufacturers Ratings of the Units

	Thermal								Hydraulic					
	Steam Turbine-Generators				Combustion Turbine-Generators		Diesel Engine-Generators							
	Conventional		Nuclear						Conventional		Pumped-Storage		Total	
	Number of Units	Kw	Number of Units	Kw	Number of Units	Kw	Number of Units	Kw	Number of Units	Kw	Number of Units	Kw	Number of Units	Kw
TOTAL SCHEDULED	148	80,236,650	65	73,660,382	10	1,630,130	2	10,800	51	2,362,608	23	5,317,402	299	163,217,972
SCHEDULED ADDITIONS BY YEARS AS OF APRIL 1, 1982														
1982	21	8,126,688	6	6,360,295	5	353,550	1	6,000	13	550,400	6	807,868	52	16,204,801
1983	18	8,105,435	12	13,172,626	2	192,880	1	4,800	20	781,882	1	350,000	54	22,607,623
1984	18	9,172,205	13	14,679,373	–	–	–	–	9	587,000	1	31,000	41	24,469,578
1985	19	8,998,001	9	10,192,297	–	–	–	–	8	433,326	5	1,103,934	41	20,727,558
1986	11	7,187,029	10	11,821,821	1	224,500	–	–	1	10,000	3	1,050,000	26	20,293,350
1987	9	5,633,734	4	4,739,291	–	–	–	–	–	–	3	847,800	16	11,220,825
1988 and Later	52	33,013,558	11	12,694,679	2	859,200	–	–	–	–	4	1,126,800	69	47,694,237
SCHEDULED ADDITIONS BY REGION														
NPCC	3	2,205,565	5	5,615,596	2	147,860	–	–	5	41,050	–	–	15	8,010,071
MAAC	5	3,054,008	5	5,471,770	–	–	–	–	–	–	–	–	10	8,525,778
ECAR	26	15,592,013	9	9,043,614	1	26,050	1	6,000	2	50,000	–	–	39	24,717,677
SERC	23	14,464,732	17	18,374,158	–	–	–	–	13	734,012	13	4,074,600	66	37,647,502
MAIN	6	2,464,581	8	9,170,749	1	224,500	–	–	–	–	–	–	15	11,859,830
SPP	24	15,329,486	5	5,957,233	1	96,440	1	4,800	1	27,000	7	192,802	39	21,607,761
ERCOT	13	8,392,129	4	4,945,412	–	–	–	–	–	–	–	–	17	13,337,541
MAPP	10	4,702,427	–	–	–	–	–	–	1	49,970	–	–	11	4,752,397
WSCC	38	14,031,709	12	15,081,850	5	1,135,280	–	–	29	1,460,576	3	1,050,000	87	32,759,415
SCHEDULED ADDITIONS BY OWNERSHIP														
Investor-Owned	104	60,810,761	56	63,391,199	7	1,257,770	–	–	13	500,562	16	5,124,600	196	131,084,892
Federal	–	–	6	6,431,444	–	–	–	–	23	1,523,500	7	192,802	36	8,147,746
Municipal	13	6,030,132	–	–	2	147,860	2	10,800	9	179,076	–	–	26	6,367,868
Cooperative	20	9,855,244	–	–	1	224,500	–	–	–	–	–	–	21	10,079,744
State and Local	11	3,540,513	3	3,837,739	–	–	–	–	6	159,470	–	–	20	7,537,722

Fig. 5 ACTUAL AND SCHEDULED ADDITIONS

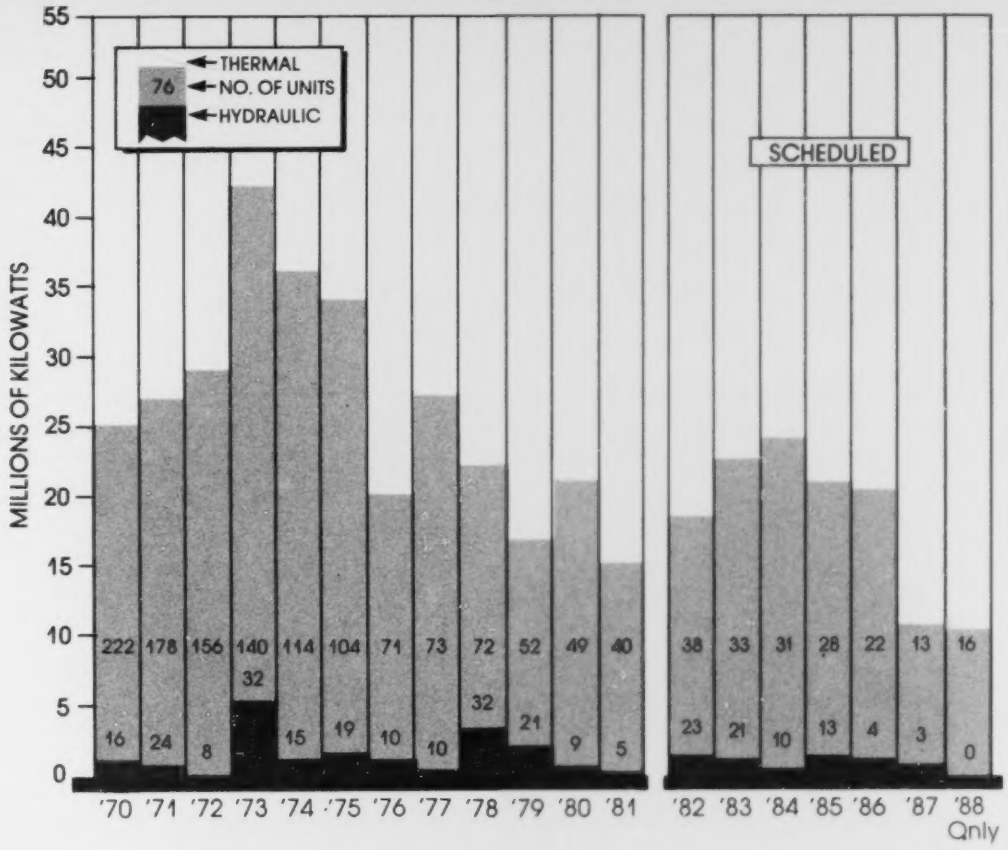


Table X NUMBER AND AGGREGATE CAPACITY OF THERMAL UNITS IN EXPANSION PROGRAM GROUPED ACCORDING TO SIZE RANGE AS OF APRIL 1, 1982 IN TERMS OF MANUFACTURERS RATINGS OF THE UNITS

Size Range, Kw	No. of Units	Aggregate Capacity, Kw	% of Total
1,300,000 Kw and Larger	15	19,914,646	12.8
1,200,000 to 1,299,999	10	12,217,617	7.9
1,100,000 to 1,199,999	26	30,130,329	19.4
1,000,000 to 1,099,999	4	4,354,232	2.8
900,000 to 999,999	6	5,791,419	3.7
800,000 to 899,999	23	18,985,918	12.2
700,000 to 799,999	15	11,025,295	7.1
600,000 to 699,999	32	20,604,199	13.2
500,000 to 599,999	32	16,819,778	10.8
400,000 to 499,999	19	8,077,100	5.2
300,000 to 399,999	11	3,993,325	2.6
200,000 to 299,999	7	1,699,474	1.1
100,000 to 199,999	7	948,000	.6
Under 100,000	18	976,130	.6
TOTAL THERMAL UNITS	225	155,537,962	100.0

NUCLEAR AND CONVENTIONAL STEAM TURBINE-GENERATORS, 300 MW AND LARGER, REMOVED FROM SCHEDULE AND DELAYED ONE YEAR OR MORE BETWEEN JAN. 1, 1982 AND APRIL 1, 1982

	Removed	Deferred One Year or More	Total Deferred and Removed
Nuclear			
Units	5	3	8
MW	6,397	3,205	9,602
Conventional			
Units	1	6	7
MW	508	3,608	4,116
TOTAL			
Units	6	9	15
MW	6,905	6,813	13,718

DELAYS AND REMOVALS FROM SCHEDULE

During 1981 the electric power systems removed from the expansion program twenty nuclear units totaling 24,593 megawatts and six conventional steam turbine-generators aggregating 3,511 megawatts. During the same twelve-month period the electric power systems also deferred by a year or more 54 steam turbine-generators, 300 megawatts or larger, totaling 43,563 megawatts, of which 18 units, totaling 21,210 megawatts, were nuclear.

During the first three months of 1982, five nuclear units rated at 6,397 megawatts and one conventional unit rated at 508 megawatts were removed from schedule. Deferred by a year or more, during the first quarter, were 9 steam turbine-generators, 300 megawatts or larger, totaling 6,813 megawatts, of which 3 units, totaling 3,205 megawatts, were nuclear.

NUCLEAR ELECTRIC POWER

During the first three months of 1982, no nuclear power generating units were ordered.

As of April 1, 1982, nuclear capacity accounts for 45 percent of the aggregate of the industry's scheduled expansion program.

As of the date of this survey, there were 75 nuclear units in commercial operation. These 75 units, which have a winter rating of 55.6 kilowatts, are listed in the accompanying tabulation. There were no additions to nuclear generating capacity during the first three months of 1982.

During the last nine months of 1982, six nuclear power units are scheduled for commercial operation. These six units have an aggregate capacity of 6.4 million kilowatts.

As of April 1982, there are 59 additional nuclear units on order and scheduled for commercial operation after 1982 in the contiguous United States, having an aggregate capacity of 67.3 million kilowatts. These units are included in the regional list given in Appendix I.

Investor-owned electric power systems are presently associated with 56 of the units listed in Appendix I as scheduled for future operation. Non-Federal government-owned systems are participating in three of the units, and the Federal government systems are constructing 6 nuclear units.

Table XI NUCLEAR POWER UNITS IN THE CONTIGUOUS U.S. AS OF APRIL 1, 1982

Name of System or Sponsor	Name or Location	Capability-MW		Type of Reactor	Planned Commercial Operation
		Summer	Winter		
Duquesne Light Company	Shippingport No. 1	60	60	LWBR	1957
Commonwealth Edison Company	Dresden No. 1	197	207	BWR	1960
Yankee Atomic Electric Company	Yankee No. 1	175	176	PWR	1961
Consumers Power Company	Big Rock Point	63	63	BWR	1962
Pacific Gas & Electric Company	Humboldt Bay	63	63	BWR	1963
Washington Public Power Supply System	Hanford	840	840	GMWC	1966
Connecticut Yankee Atomic Power Company	Haddam No. 1	555	580	PWR	1968
Southern California Edison Company and San Diego Gas & Electric Company	San Onofre No. 1	436	436	PWR	1968
Jersey Central Power & Light Company	Oyster Creek No. 1	620	650	BWR	1969
Niagara Mohawk Power Corporation	Nine Mile Point No. 1	610	610	BWR	1969
Rochester Gas and Electric Corporation	Ginna No. 1	470	470	PWR	1969
Northeast Utilities	Millstone Point No. 1	654	660	BWR	1970
Wisconsin Electric Power Company	Point Beach No. 1	495	495	PWR	1970
Carolina Power & Light Company	Robinson No. 2	665	700	PWR	1971
Dairyland Power Cooperative	La Crosse	46	46	BWR	1971
Northern States Power Company	Monticello No. 1	536	557	BWR	1971
Commonwealth Edison Company	Dresden No. 2	772	794	BWR	1971
Boston Edison Company	Pilgrim No. 1	670	670	BWR	1972
Commonwealth Edison Company	Quad Cities No. 1	768	789	BWR	1972
Commonwealth Edison Company	Quad Cities No. 2	769	789	BWR	1972
Florida Power & Light Company	Turkey Point No. 3	666	696	PWR	1972
Maine Yankee Atomic Power Company	Wiscasset	814	830	PWR	1972
Vermont Yankee Nuclear Power Corporation	Vernon	496	528	BWR	1972
Virginia Electric & Power Company	Surry No. 1	775	775	PWR	1972
Commonwealth Edison Company	Dresden No. 3	773	794	BWR	1973
Consumers Power Company	Palisades No. 1	635	740	PWR	1973
Duke Power Company	Oconee No. 1	860	860	PWR	1973
Duke Power Company	Oconee No. 2	860	860	PWR	1973
Florida Power and Light Company	Turkey Point No. 4	666	696	PWR	1973
Northern States Power Company	Prairie Island No. 1	503	523	PWR	1973
Omaha Public Power District	Fort Calhoun No. 1	439	457	PWR	1973
Tennessee Valley Authority	Browns Ferry No. 1	1,067	1,067	BWR	1973
Virginia Electric & Power Company	Surry No. 2	775	775	PWR	1973
Wisconsin Electric Power Company	Point Beach No. 2	495	495	PWR	1973
Arkansas Power and Light Company	Arkansas Nuclear No. 1	836	836	PWR	1974
Commonwealth Edison Company	Zion No. 1	1,040	1,040	PWR	1974
Commonwealth Edison Company	Zion No. 2	1,040	1,040	PWR	1974
Consolidated Edison Company of NY, Inc	Indian Point No. 2	849	864	PWR	1974
Duke Power Company	Oconee No. 3	860	860	PWR	1974
Iowa Electric Light and Power Company	Arnold No. 1	480	510	BWR	1974
Metropolitan Edison Company	Three Mile Island No. 1	776	800	PWR	1974
Nebraska Public Power District	Cooper Nuclear No. 1	778	778	BWR	1974
Northern States Power Company	Prairie Island No. 2	500	520	PWR	1974
Philadelphia Electric Company	Peach Bottom No. 2	1,051	1,055	BWR	1974
Philadelphia Electric Company	Peach Bottom No. 3	1,035	1,035	BWR	1974
Wisconsin Public Service Corporation	Kewaunee No. 1	525	517	PWR	1974
Baltimore Gas & Electric Company	Calvert Cliffs No. 1	810	820	PWR	1975
Carolina Power & Light Company	Brunswick No. 2	790	790	BWR	1975
Georgia Power Company	Hatch No. 1	771	771	BWR	1975
Indiana & Michigan Electric Company	Cook No. 1	1,050	1,050	PWR	1975
Power Authority of the State of New York	Fitzpatrick No. 1	821	821	BWR	1975
Sacramento Utility District	Rancho Seco No. 1	875	903	PWR	1975
Tennessee Valley Authority	Browns Ferry No. 2	1,067	1,067	BWR	1975
Duquesne Light Company	Beaver Valley No. 1	800	800	PWR	1976
Florida Power and Light Company	St. Lucie No. 1	777	795	PWR	1976
Northeast Utilities	Millstone Point No. 2	864	864	PWR	1976
Portland General Electric Company	Trojan	1,080	1,080	PWR	1976
Power Authority of the State of New York	Indian Point No. 3	965	965	PWR	1976
Alabama Power Company	Farley No. 1	807	807	PWR	1977
Baltimore Gas & Electric Company	Calvert Cliffs No. 2	825	860	PWR	1977
Carolina Power & Light Company	Brunswick No. 1	790	790	BWR	1977
Florida Power Corporation	Crystal River No. 3	782	807	PWR	1977
Public Service Electric and Gas Company	Salem Nuclear No. 1	1,079	1,100	PWR	1977
Tennessee Valley Authority	Browns Ferry No. 3	1,067	1,067	BWR	1977
Toledo Edison Company	Davis-Besse No. 1	906	906	PWR	1977
Indiana & Michigan Electric Company	Cook No. 2	1,100	1,100	PWR	1978
Virginia Electric & Power Company	North Anna No. 1	898	907	PWR	1978
Georgia Power Company	Hatch No. 2	771	771	BWR	1979
Public Service Company of Colorado	Fort St. Vrain No.1	200	200	HTGR	1979
Arkansas Power & Light Company	Arkansas Nuclear No. 2	858	858	PWR	1980
Virginia Electric & Power Company	North Anna No. 2	870	870	PWR	1980
Alabama Power Company	Farley No. 2	812	812	PWR	1981
Duke Power Company	McGuire No. 1	1,180	1,180	PWR	1981
Public Service Electric & Gas Co	Salem Nuclear No. 2	1,106	1,120	PWR	1981
Tennessee Valley Authority	Sequoyah No. 1	1,128	1,128	PWR	1981
TOTAL	75 Units	54,907	55,611		

BWR = Boiling Water Reactor
GMWC = Graphite Moderated Water Cooled Reactor
HTGR = High Temperature, Gas-Cooled Reactor
LWBR = Light Water Breeder Reactor
PWR = Pressurized Water Reactor

PART II / MANUFACTURE OF HEAVY ELECTRIC POWER EQUIPMENT IN THE U.S.A.

This section of the report presents a summary, as of April 1, 1982, of information relative to shipments, new orders, and scheduled production of heavy electric power equipment by the leading manufacturers in the United States.

Orders placed by U.S. electric power systems with foreign manufacturers for conventional and nuclear steam turbine-generators, generators for hydraulic turbines, hydraulic turbines, and combustion turbine-generators are shown as an additional line below the domestic manufacturers' total on the respective equipment tables.

The accompanying order and backlog synopsis table (Table XII) also incorporates orders to foreign manufacturers for certain types of equipment.

Table XIX, on the manufacture of power transformers, shows data for four size classifications above 501 Kva rather than the two size classifications used previous to 1978.

Information relative to estimated open manufacturing capacity, where given, is based on current estimates by the individual manufacturers of the aggregate capacity of new equipment, over and above that on order and scheduled for delivery as of April 1, 1982, that could be produced and shipped during the years indicated – provided orders were placed in the very near future.

Table XII CAPACITY OF NEW HEAVY POWER EQUIPMENT PLACED ON ORDER WITH MANUFACTURERS DURING 1981 AND DURING FIRST THREE MONTHS OF 1982, AND TOTAL CAPACITY ON ORDER AND SCHEDULED FOR SHIPMENT AS OF APRIL 1, 1982 TO U.S. ELECTRIC POWER SYSTEMS

	Ordered		Total On Order and Scheduled for Shipment as of 4-1-82
	1981	First 3 Months 1982	
Electric Generating Units (4,000 Kw and Larger)			
Steam Turbine-Generators, Kw			
Conventional	7,919,854(a)	178,000(a)	64,464,562(a)
Nuclear	–	–	23,080,910
Combustion Turbine-Generators, Kw	524,580	–	1,788,170
Generators for Hydraulic Turbines, Kw	209,340(a)	102,476(a)	3,534,246(a)
TOTAL	8,653,774(a)	280,476(a)	92,867,888(a)
Steam Generators, 1,000 Lbs Steam Per Hour	51,880	–	270,502
Nuclear Power Reactors (50,000 Kwe and Larger)	–	–	97,922,000
Hydraulic Turbines, Hp	40,000	–	4,979,480
Power Transformers, Mva(b)	91,093	16,183	160,733

(a) Includes equipment on order with foreign manufacturers
(b) Includes U.S. Industrials

Table XIII MANUFACTURE OF ELECTRIC GENERATING EQUIPMENT – STEAM AND HYDRAULIC UNITS* – 4,000 Kw and Larger**

	Shipped		Scheduled as of April 1, 1982							Total Scheduled for Shipment as of 4-1-82	New Orders Placed 1-1-82 to 4-1-82
	1981	First 3 Months 1982	Last 9 Months 1982	1982	1983	1984	1985	1986	1987 and Later		
U.S. Electric Power Systems											
Units	35	3	28	31	17	21	13	13	55	147	1
Kw	12,762,314	885,368	9,911,991	10,797,359	6,002,498	11,079,419	8,634,007	9,877,375	40,234,812	85,740,102	24,000
U.S. Industrials											
Units	15	3	11	14	6	2	3	–	–	22	–
Kw	376,795	68,840	162,350	231,190	230,372	79,000	103,800	–	–	575,522	–
Outside U.S.											
Units	12	1	11	12	18	5	1	1	1	37	5
Kw	2,346,175	550,000	2,711,675	3,261,675	8,085,745	2,595,070	647,000	647,000	980,000	15,666,490	62,000
Total											
Units	62	7	50	57	41	28	17	14	56	206	3
Kw	15,485,284	1,504,208	12,786,016	14,290,224	14,318,615	13,753,489	9,384,807	10,524,375	41,214,812	101,982,114	43,000

*Does not include combustion turbine-generators, but does include steam turbine-generators for nuclear power plants.
**Manufacturers' ratings.

Table XIV MANUFACTURE OF STEAM TURBINE-GENERATORS – 4,000 Kw and Larger*

	Shipped		Scheduled as of April 1, 1982							Total Scheduled for Shipment as of 4-1-82	New Orders Placed 1-1-82 to 4-1-82
	1981	First 3 Months 1982	Last 9 Months 1982	1982	1983	1984	1985	1986	1987 and Later		
U.S. Electric Power Systems											
Units	21	3	16	19	12	17	13	13	55	126	1
Kw	10,932,614	885,368	8,970,721	9,856,089	5,777,528	10,888,569	8,634,007	9,877,375	40,234,812	84,383,012	24,000
U.S. Industrials											
Units	15	3	11	14	6	2	3	–	–	22	–
Kw	376,795	68,840	162,350	231,190	230,372	79,000	103,800	–	–	575,522	–
Outside U.S.											
Units	11	1	11	12	18	5	1	1	1	37	5
Kw	2,157,175	550,000	2,711,675	3,261,675	8,085,745	2,595,070	647,000	647,000	980,000	15,666,490	62,000
Total											
Units	47	7	38	45	36	24	17	14	56	185	3
Kw	13,466,584	1,504,208	11,844,746	13,348,954	14,093,645	13,562,639	9,384,807	10,524,375	41,214,812	100,625,024	43,000

*Manufacturers' ratings.

Table XIV-A MANUFACTURE OF CONVENTIONAL STEAM TURBINE-GENERATORS – 4,000 Kw and Larger* (Included in Table XIV)

	Shipped		Scheduled as of April 1, 1982							Total Scheduled for Shipment as of 4-1-82	New Orders Placed 1-1-82 to 4-1-82
	1981	First 3 Months 1982	Last 9 Months 1982	1982	1983	1984	1985	1986	1987 and Later		
U.S. Electric Power Systems											
Units	19	3	14	17	12	16	13	8	43	106	1
Kw	8,413,190	885,368	6,456,686	7,342,054	5,777,528	9,728,569	8,634,007	4,885,000	25,820,312	61,302,102	24,000
U.S. Industrials											
Units	15	3	11	14	6	2	3	–	–	22	–
Kw	376,795	68,840	162,350	231,190	230,372	79,000	103,800	–	–	575,522	–
Outside U.S.											
Units	10	1	10	11	14	4	1	1	–	30	5
Kw	1,349,500	550,000	1,904,000	2,454,000	4,577,574	1,888,574	647,000	647,000	–	9,664,148	62,000
Total											
Units	44	7	35	42	32	22	17	9	43	158	3
Kw	10,139,485	1,504,208	8,523,036	10,027,244	10,585,474	11,696,143	9,384,807	5,532,000	25,820,312	71,541,772	43,000
Orders to Foreign Manufacturers											
Units	5	–	8	8	6	2	3	–	–	19	3
Kw	848,000	–	737,600	737,600	777,860	637,000	1,010,000	–	–	3,162,460	154,000

*Manufacturers' ratings.

Table XIV-B MANUFACTURE OF NUCLEAR STEAM TURBINE-GENERATORS – 50,000 Kw and Larger* (Included in Table XIV)

	Shipped		Scheduled as of April 1, 1982							Total Scheduled for Shipment as of 4-1-82	New Orders Placed 1-1-82 to 4-1-82
	1981	First 3 Months 1982	Last 9 Months 1982	1982	1983	1984	1985	1986	1987 and Later		
U.S. Electric Power Systems											
Units	2	–	2	2	–	1	–	5	12	20	–
Kw	2,519,424	–	2,514,035	2,514,035	–	1,160,000	–	4,992,375	14,414,500	23,080,910	–
U.S. Industrials											
Units	–	–	–	–	–	–	–	–	–	–	–
Kw	–	–	–	–	–	–	–	–	–	–	–
Outside U.S.											
Units	1	–	1	1	4	1	–	–	1	7	–
Kw	807,675	–	807,675	807,675	3,508,171	706,496	–	–	980,000	6,002,342	–
Total											
Units	3	–	3	3	4	2	–	5	13	27	–
Kw	3,327,099	–	3,321,710	3,321,710	3,508,171	1,866,496	–	4,992,375	15,394,500	29,083,252	–
Orders to Foreign Manufacturers											
Units	1	–	–	–	–	–	–	–	–	–	–
Kw	1,268,516	–	–	–	–	–	–	–	–	–	–

*Manufacturers' ratings.

Table XV MANUFACTURE OF GENERATORS FOR HYDRAULIC TURBINES* – 4,000 Kw and Larger**

	Shipped		Scheduled as of April 1, 1982							Total Scheduled for Shipment as of 4-1-82	New Orders Placed 1-1-82 to 4-1-82
	1981	First 3 Months 1982	Last 9 Months 1982	1982	1983	1984	1985	1986	1987 and Later		
U.S. Electric Power Systems											
Units	14	–	12	12	5	4	–	–	–	21	–
Kw	1,829,700	–	941,270	941,270	224,970	190,850	–	–	–	1,357,090	–
U.S. Industrials											
Units	–	–	–	–	–	–	–	–	–	–	–
Kw	–	–	–	–	–	–	–	–	–	–	–
Outside U.S.											
Units	1	–	–	–	–	–	–	–	–	–	–
Kw	189,000	–	–	–	–	–	–	–	–	–	–
Total											
Units	15	–	12	12	5	4	–	–	–	21	–
Kw	2,018,700	–	941,270	941,270	224,970	190,850	–	–	–	1,357,090	–
Orders to Foreign Manufacturers											
Units	8	–	3	3	5	3	1	2	1	15	3
Kw	163,300	–	90,080	90,080	385,076	575,200	281,700	563,400	281,700	2,177,156	102,476

*Includes generators for pumped-storage plants.
**Manufacturers' ratings.

Table XVI MANUFACTURE OF CONVENTIONAL STEAM GENERATORS – 450 Psi Pressure and Higher

	Shipped		Scheduled as of April 1, 1982							Total Scheduled for Shipment as of 4-1-82	New Orders Placed 1-1-82 to 4-1-82
	1981	First 3 Months 1982	Last 9 Months 1982	1982	1983	1984	1985	1986	1987 and Later		
U.S. Electric Power Systems											
Units	12	6	12	18	11	10	10	7	8	58	–
M lb/hr	36,496	25,940	41,671	67,611	50,801	45,229	50,344	35,966	46,491	270,502	–
U.S. Industrials											
Units	13	5	12	17	3	–	–	–	–	15	–
M lb/hr	5,524	1,628	3,545	5,173	1,584	–	–	–	–	5,129	–
Outside U.S.											
Units	7	2	8	10	5	1	2	1	–	17	–
M lb/hr	21,389	4,303	10,916	15,219	17,121	4,579	8,327	3,748	–	44,691	–
Total											
Units	32	13	32	45	19	11	12	8	8	90	–
M lb/hr	63,409	31,871	56,132	86,003	69,506	49,808	58,671	39,714	46,491	320,322	–

Table XVII MANUFACTURE OF HYDRAULIC TURBINES* – 5,000 Horsepower and Larger

	Shipped		Scheduled as of April 1, 1982							Total Scheduled for Shipment as of 4-1-82	New Orders Placed 1-1-82 to 4-1-82
	1981	First 3 Months 1982	Last 9 Months 1982	1982	1983	1984	1985	1986	1987 and Later		
U.S. Electric Power Systems											
Units	10	–	2	2	3	8	5	–	4	22	–
Hp	883,000	–	16,800	16,800	153,620	2,253,060	1,176,000	–	1,380,000	4,979,480	–
U.S. Industrials											
Units	2	–	–	–	–	–	–	–	–	–	–
Hp	22,530	–	–	–	–	–	–	–	–	–	–
Outside U.S.											
Units	2	–	2	2	3	2	2	–	–	9	–
Hp	48,280	–	344,140	344,140	960,000	183,600	183,600	–	–	1,671,340	–
Total											
Units	14	–	4	4	6	10	7	–	4	31	–
Hp	953,810	–	360,940	360,940	1,113,620	2,436,660	1,359,600	–	1,380,000	6,650,820	–
Orders to Foreign Manufacturers											
Units	1	–	–	–	–	–	–	–	–	–	–
Hp	190,000	–	–	–	–	–	–	–	–	–	–

*Includes hydraulic turbines for pumped-storage plants.

Table XVIII MANUFACTURE OF COMBUSTION TURBINE-GENERATORS – 4,000 Kw and Larger*

	Shipped		Scheduled as of April 1, 1982							Total Scheduled for Shipment as of 4-1-82	New Orders Placed 1-1-82 to 4-1-82
	1981	First 3 Months 1982	Last 9 Months 1982	1982	1983	1984	1985	1986	1987 and Later		
U.S. Electric Power Systems											
Units	5	–	3	3	2	1	–	2	2	10	–
Kw	425,220	–	221,790	221,790	192,880	224,500	–	289,800	859,200	1,788,170	–
U.S. Industrials											
Units	–	–	7	7	1	–	–	–	–	8	–
Kw	–	–	613,140	613,140	96,440	–	–	–	–	709,580	–
Outside U.S.											
Units	7	–	13	13	–	–	–	–	–	13	–
Kw	501,440	–	941,220	941,220	–	–	–	–	–	941,220	–
Total											
Units	12	–	23	23	3	1	–	2	2	31	–
Kw	926,660	–	1,776,150	1,776,150	289,320	224,500	–	289,800	859,200	3,438,970	–
Orders to Foreign Manufacturers											
Units	–	–	–	–	–	–	–	–	–	–	–
Kw	–	–	–	–	–	–	–	–	–	–	–

*Manufacturers' ratings.

Table XIX MANUFACTURE OF POWER TRANSFORMERS – 501 Kva and Larger

		Shipped		Scheduled as of April 1, 1982								
		1981	First 3 Months 1982	Last 9 Months 1982	1982	1983	1984	1985	1986	1987 and Later	Total Scheduled for Shipment as of 4-1-82	New Orders Placed 1-1-82 to 4-1-82
501 to 10,000 Kva												
U.S. Electric Power Systems and U.S. Industrials	Units	5,133	1,237	2,315	3,552	66	194	9	13	52	2,649	1,151
	Mva	13,691	3,341	6,798	10,139	277	361	24	123	442	8,025	3,277
Outside U.S.	Units	317	140	298	438	–	3	–	–	5	306	100
	Mva	876	258	858	1,116	–	3	–	–	44	905	257
TOTAL	Units	5,450	1,377	2,613	3,990	66	197	9	13	57	2,955	1,251
	Mva	14,567	3,599	7,656	11,255	277	364	24	123	486	8,930	3,534
10,001 to 30,000 Kva												
U.S. Electric Power Systems and U.S. Industrials	Units	782	197	419	616	62	39	3	5	37	565	159
	Mva	21,489	5,350	10,872	16,222	1,884	1,317	92	186	993	15,344	4,129
Outside U.S.	Units	32	6	17	23	–	–	–	–	5	22	3
	Mva	789	131	374	505	–	–	–	–	121	495	88
TOTAL	Units	814	203	436	639	62	39	3	5	42	587	162
	Mva	22,278	5,481	11,246	16,727	1,884	1,317	92	186	1,114	15,839	4,217
30,001 to 100,000 Kva												
U.S. Electric Power Systems and U.S. Industrials	Units	291	64	143	207	46	25	13	6	40	273	47
	Mva	19,415	4,336	8,976	13,312	3,046	2,039	786	453	2,882	18,182	3,240
Outside U.S.	Units	18	1	13	14	–	2	–	–	–	15	10
	Mva	1,516	27	1,234	1,261	–	160	–	–	–	1,394	1,066
TOTAL	Units	309	65	156	221	46	27	13	6	40	288	57
	Mva	20,931	4,363	10,210	14,573	3,046	2,199	786	453	2,882	19,576	4,306
100,001 Kva and Larger												
U.S. Electric Power Systems and U.S. Industrials	Units	169	50	140	193	60	32	32	20	35	322	20
	Mva	60,242	15,822	48,181	64,003	22,565	11,815	14,638	7,343	14,640	119,182	5,537
Outside U.S.	Units	20	4	3	7	8	–	–	–	–	11	1
	Mva	7,876	1,768	1,315	3,083	3,464	–	–	–	–	4,779	315
TOTAL	Units	189	54	146	200	68	32	32	20	35	333	21
	Mva	68,118	17,590	49,496	67,086	26,029	11,815	14,638	7,343	14,640	123,961	5,852
TOTAL (501 Kva and Larger)												
U.S. Electric Power Systems and U.S. Industrials	Units	6,375	1,548	3,020	4,568	234	290	57	44	164	3,809	1,377
	Mva	114,837	28,849	74,827	103,676	27,772	15,532	15,540	8,105	18,957	160,733	16,183
Outside U.S.	Units	387	151	331	482	8	5	–	–	10	354	114
	Mva	11,057	2,184	3,781	5,965	3,464	163	–	–	165	7,573	1,726
TOTAL	Units	6,762	1,699	3,351	5,050	242	295	57	44	174	4,163	1,491
	Mva	125,894	31,033	78,608	109,641	31,236	15,695	15,540	8,105	19,122	168,306	17,909
Estimated Open Manufacturing Capacity for Production of Additional Power Transformers, 501 Kva and Larger, Mva					44,000	110,000	137,000	138,000	146,000	148,000 (1987 only)		

Table XX MANUFACTURE OF NUCLEAR REACTORS – 50,000 Kwe and Larger*

	Completed		Scheduled as of April 1, 1982							Total Scheduled for Completion as of 4-1-82	New Orders Placed 1-1-82 to 4-1-82
	1981	First 3 Months 1982	Last 9 Months 1982	1982	1983	1984	1985	1986	1987 and Later		
U.S. Electric Power Systems											
Units	3	–	6	6	14	11	10	10	36	87	–
Kwe	3,124,000	–	6,600,000	6,600,000	14,507,000	12,038,000	11,020,000	11,542,000	42,215,000	97,922,000	–
Outside U.S.											
Units	1	–	5	5	4	9	3	4	7	32	–
Kwe	951,000	–	4,006,000	4,006,000	3,063,000	7,763,000	2,813,000	3,704,000	6,897,000	28,246,000	–
Total											
Units	4	–	11	11	18	20	13	14	43	119	–
Kwe	4,075,000	–	10,606,000	10,606,000	17,570,000	19,801,000	13,833,000	15,246,000	49,112,000	126,168,000	–

*Manufacturers' ratings.

APPENDIX I

Scheduled Additions to Electric Generating Capacity Based on Scheduled Dates of Commercial Operations as of April 1, 1982, and Capacity Placed in Service During the First Three Months of 1982.

Includes all electric generating units 4,000 kw and larger on order and scheduled for service by the U.S. Electric Power Systems.

SYMBOLS:

Investor-Owned I
Federal ..... F
Municipal ..... M
Cooperative C
State & Local ..... SL
Thermal
- Conventional steam turbine-generator ..... T
- Nuclear steam turbine-generator ..... N
- Combustion turbine-generator ..... G
- Diesel engine-generator ..... D

Hydraulic
- Hydraulic turbine-generator ..... H

Pumped-Storage
- Pumped-storage turbine-generator ..... S
- Reversible pumped-storage turbine-generator . R

Combined-Cycle
- Combustion turbine-generator for combined-cycle operation ..... GC
- Conventional steam turbine-generator for combined-cycle operation ..... TC

* Denotes units placed in commercial operation during the first three months of 1982.

° Denotes units added to the expansion program since October 1, 1981.

+ Denotes multiple ownership of the unit. In such cases, the name of the participating power system in whose service area the installation will be located is shown. In case the location does not fall within the service area of any of the participants, the name of the power system shown is the first in alphabetical order among the major participants.

NOTES: Kilowatts shown for individual generating units represent, in most cases, the net operating capability expected by the power systems; in other cases they represent the manufacturer's nameplate rating of the unit.

It is the convention in listing combined-cycle projects that the first line item is the combustion turbine-generator and the second line item is the steam turbine-generator.. Combined-cycle operation is indicated by the symbols GC and TC in a brace:

GC }
TC }

NPCC

System	Station	Owner-ship	Type	Exp. Net Capability	Sched. Date of Operation
CENTRAL MAINE POWER CO	BRUNSWICK TOPSHAM NO 1	I	H	13,200	1982 *
LONG ISLAND LIGHTING CO	SHOREHAM NO 1	I	N	813,000	1983
MASSACHUSETTS MUNICIPAL WHOLESALE ELEC C	STONY BROOK ENERGY CENT	M	G	91,000	1982
MASSACHUSETTS MUNICIPAL WHOLESALE ELEC C	STONY BROOK GT8	M	G	91,000	1982
NEW STATE ELECTRIC & GAS CORP	SOMERSET NO 1	I	T	625,000	1984
NEW YORK STATE ELECTRIC & GAS CO	UPPER MECHANICSVILLE #1	I	H	8,400	1983
NEW YORK STATE ELECTRIC & GAS CO	UPPER MECHANICSVILLE #2	I	H	8,400	1983
NIAGARA MOHAWK POWER CORP	GRANBY NO 1	I	H	5,000	1983
NIAGARA MOHAWK POWER CORP	GRANBY NO 2	I	H	5,000	1983
NIAGARA MOHAWK POWER CORP	LAKE ERIE NO 1	I	T	860,000	1991
NIAGARA MOHAWK POWER CORP	NINE MILE POINT NO 2	I	N	1,080,000	1986
NORTHEAST UTILITIES	HADLEY FALLS NO 2	I	H	15,000	1983
NORTHEAST UTILITIES CO	MILLSTONE POINT NO 3	I	N	1,150,000	1986
POWER AUTHORITY OF THE STATE OF NEW YORK	700 MW FOSSIL	SL	T	700,000	1987
PUBLIC SERVICE CO OF NEW HAMPSHIRE	SEABROOK NO 1	I	N	1,150,000	1984
PUBLIC SERVICE CO OF NEW HAMPSHIRE	SEABROOK NO 2	I	N	1,150,000	1986

MAAC

System	Station	Owner-ship	Type	Exp. Net Capability	Sched. Date of Operation
BALTIMORE GAS & ELECTRIC CO	BRANDON SHORES NO 1	I	T	610,000	1984
BALTIMORE GAS & ELECTRIC CO	BRANDON SHORES NO 2	I	T	610,000	1988
DELMARVA POWER & LIGHT CO	VIENNA NO 9	I	T	500,000	1990
o GENERAL PUBLIC UTILITIES	COAL NO 1	I	T	663,400	1991
o GENERAL PUBLIC UTILITIES	COAL NO 2	I	T	663,400	1994
+PENNSYLVANIA POWER & LIGHT CO	SUSQUEHANNA NO 1	I	N	1,050,000	1983
+PENNSYLVANIA POWER & LIGHT CO	SUSQUEHANNA NO 2	I	N	1,050,000	1984
PHILADELPHIA ELECTRIC CO	LIMERICK NO 1	I	N	1,055,000	1985
PHILADELPHIA ELECTRIC CO	LIMERICK NO 2	I	N	1,055,000	1987
+PUBLIC SERVICE ELECTRIC & GAS CO	HOPE CREEK NO 1	I	N	1,067,000	1986

ECAR

System	Station	Owner-ship	Type	Exp. Net Capability	Sched. Date of Operation
ALLEGHENY POWER SYSTEM INC	PLEASANTS NO 1	I	T	626,000	1983
AMERICAN ELECTRIC POWER CO	LEWIS COUNTY	I	T	1,300,000	1992
AMERICAN ELECTRIC POWER CO	RACINE DAM A	I	H	20,000	1982
AMERICAN ELECTRIC POWER CO	RACINE DAM B	I	H	20,000	1982
AMERICAN ELECTRIC POWER CO	ROCKPORT NO 1	I	T	1,300,000	1984
AMERICAN ELECTRIC POWER CO	ROCKPORT NO 2	I	T	1,300,000	1986
BIG RIVERS ELECTRIC CORP	D B WILSON NO 1	C	T	395,000	1984
BIG RIVERS ELECTRIC CORP	D B WILSON NO 2	C	T	395,000	1985
CINCINNATI GAS & ELECTRIC CO	EAST BEND NO 1	I	T	600,000	1988
CINCINNATI GAS & ELECTRIC CO	ZIMMER NO 1	I	N	800,000	1982
CLEVELAND ELECTRIC ILLUMINATING CO	PERRY NO 1	I	N	1,205,000	1984
CLEVELAND ELECTRIC ILLUMINATING CO	PERRY NO 2	I	N	1,205,000	1988
COLUMBUS & SOUTHERN OHIO ELECTRIC CO	POSTON NO 5	I	T	375,000	1992
COLUMBUS & SOUTHERN OHIO ELECTRIC CO	POSTON NO 6	I	T	375,000	1992
CONSUMERS POWER CO	MIDLAND NO 1	I	N	530,000	1984
CONSUMERS POWER CO	MIDLAND NO 2	I	N	805,000	1983
DAYTON POWER & LIGHT CO	KILLEN NO 2	I	T	520,000	1982
DAYTON POWER & LIGHT CO	KILLEN CT	I	G	26,100	1982
DETROIT EDISON CO	BELLE RIVER NO 1	I	T	676,000	1984
DETROIT EDISON CO	BELLE RIVER NO 2	I	T	676,000	1985
DETROIT EDISON CO	FERMI NO 2	I	N	1,093,000	1983
+DUQUESNE LIGHT CO	BEAVER VALLEY NO 2	I	N	833,000	1986
EAST KENTUCKY POWER COOP	SMITH NO 1	C	T	600,000	1987
HOOSIER ENERGY DIVISION	MEROM NO 1	C	T	500,000	1982
INDIANAPOLIS POWER & LIGHT CO	PETERSBURG NO 4	I	T	515,000	1986

ECAR
Continued

System	Station	Owner-ship	Type	Exp. Net Capability	Sched. Date of Operation
KENTUCKY UTILITIES CO	GHENT NO 4	I	T	500,000	1984
KENTUCKY UTILITIES CO	HANCOCK NO 1	I	T	650,000	1989
KENTUCKY UTILITIES CO	HANCOCK NO 2	I	T	650,000	1994
LOUISVILLE GAS & ELECTRIC CO	MILL CREEK NO 4	I	T	495,000	1982
LOUISVILLE GAS & ELECTRIC CO	TRIMBLE COUNTY NO 1	I	T	495,000	1986
LOUISVILLE GAS & ELECTRIC CO	TRIMBLE COUNTY NO 2	I	T	495,000	1992
○ MICHIGAN SOUTH CENTRAL POWER AGENCY	PROJECT NO 1	SL	T	50,000	1982
NORTHERN INDIANA PUBLIC SERVICE CO	SCHAHFER NO 17	I	T	344,000	1983
NORTHERN INDIANA PUBLIC SERVICE CO	SCHAHFER NO 18	I	T	344,000	1985
PUBLIC SERVICE CO OF INDIANA	GIBSON NO 5	I	T	650,000	1982
PUBLIC SERVICE CO OF INDIANA	MARBLE HILL NO 1	I	N	938,000	1986
PUBLIC SERVICE CO OF INDIANA	MARBLE HILL NO 2	I	N	938,000	1987
SOUTHERN INDIANA GAS & ELECTRIC CO	BROWN NO 2	I	T	250,000	1985
STURGIS MICHIGAN	MUNICIPAL LIGHT PLT	M	D	6,000	1982

SERC

ALABAMA POWER CO	HARRIS NO 1	I	H	58,600	1983
ALABAMA POWER CO	HARRIS NO 2	I	H	58,600	1983
ALABAMA POWER CO	MILLER NO 2	I	T	654,000	1985
ALABAMA POWER CO	MILLER NO 3	I	T	654,000	1989
ALABAMA POWER CO	MILLER NO 4	I	T	654,000	1991
ALABAMA POWER CO	MITCHELL NO 5	I	H	50,000	1985
ALABAMA POWER CO	MITCHELL NO 6	I	H	50,000	1985
ALABAMA POWER CO	MITCHELL NO 7	I	H	50,000	1985
CAROLINA POWER & LIGHT CO	HARRIS NO 1	I	N	900,000	1985
CAROLINA POWER & LIGHT CO	HARRIS NO 2	I	N	900,000	1989
CAROLINA POWER & LIGHT CO	MAYO NO 1	I	T	720,000	1983
CAROLINA POWER & LIGHT CO	MAYO NO 2	I	T	720,000	1991
DUKE POWER CO	BAD CREEK NO 1	I	R	250,000	1990
DUKE POWER CO	BAD CREEK NO 2	I	R	250,000	1990
DUKE POWER CO	BAD CREEK NO 3	I	R	250,000	1991
DUKE POWER CO	BAD CREEK NO 4	I	R	250,000	1991
DUKE POWER CO	CATAWBA NO 1	I	N	1,145,000	1984
DUKE POWER CO	CATAWBA NO 2	I	N	1,145,000	1985
DUKE POWER CO	CHEROKEE NO 1 INDEF	I	N	1,280,000	1990
DUKE POWER CO	MCGUIRE NO 2	I	N	1,180,000	1983
FLORIDA POWER CORP	CRYSTAL RIVER NO 4	I	T	670,000	1982
FLORIDA POWER CORP	CRYSTAL RIVER NO 5	I	T	670,000	1984
FLORIDA POWER & LIGHT CO	MARTIN NO 3	I	T	700,000	1989
FLORIDA POWER & LIGHT CO	MARTIN NO 4	I	T	700,000	1990
FLORIDA POWER & LIGHT CO	ST LUCIE NO 2	I	N	802,000	1983
GEORGIA POWER CO	ROCKY MOUNTAIN NO 1	I	R	225,000	1987
GEORGIA POWER CO	ROCKY MOUNTAIN NO 2	I	R	225,000	1987
GEORGIA POWER CO	ROCKY MOUNTAIN NO 3	I	R	225,000	1987
GEORGIA POWER CO	SCHERER NO 1	I	T	808,000	1982 *
GEORGIA POWER CO	SCHERER NO 2	I	T	808,000	1984
GEORGIA POWER CO	SCHERER NO 3	I	T	808,000	1987
GEORGIA POWER CO	SCHERER NO 4	I	T	808,000	1989
GEORGIA POWER CO	VOGTLE NO 1	I	N	1,150,000	1987
GEORGIA POWER CO	VOGTLE NO 2	I	N	1,150,000	1988
○ GULF POWER CO	CARYVILLE NO 1	I	T	503,000	1995
○ GULF POWER CO	CARYVILLE NO 2	I	T	503,000	1999
* JACKSONVILLE FLORIDA	ST JOHNS RIVER PARK NO 1	M	T	525,000	1985
* JACKSONVILLE FLORIDA	ST JOHNS RIVER PARK NO 2	M	T	525,000	1987
LAKELAND FLORIDA	MC INTOSH NO 3	M	T	334,000	1982
ORLANDO FLORIDA	STANTON NO 1	M	T	415,000	1986

SERC Continued

System	Station	Ownership	Type	Exp. Net Capability	Sched. Date of Operation
○+PROJECT MANAGEMENT CORP	CLINCH RIVER BREEDER	F	N	350,000	1989
SEMINOLE ELECTRIC COOP	SEMINOLE NO 1	C	T	600,000	1983
SEMINOLE ELECTRIC COOP	SEMINOLE NO 2	C	T	600,000	1985
SOUTH CAROLINA ELECTRIC & GAS CO	SUMMER NO 1	I	N	900,000	1982
SOUTH CAROLINA PUBLIC SERVICE AUTHORITY	CROSS NO 2	SL	T	450,000	1984
SOUTH CAROLINA PUBLIC SERVICE AUTHORITY	CROSS NO 1	SL	T	450,000	1988
TAMPA ELECTRIC CO	BIG BEND NO 4	I	T	417,000	1985
TENNESSEE VALLEY AUTHORITY	BELLEFONTE NO 1	F	N	1,176,975	1985
TENNESSEE VALLEY AUTHORITY	BELLEFONTE NO 2	F	N	1,176,975	1986
TENNESSEE VALLEY AUTHORITY	SEQUOYAH NO 2	F	N	1,148,000	1982
TENNESSEE VALLEY AUTHORITY	WATTS BAR NO 1	F	N	1,177,000	1984
TENNESSEE VALLEY AUTHORITY	WATTS BAR NO 2	F	N	1,177,000	1985
○U S ARMY CORPS OF ENGINEERS	HARTWELL NO 5	F	H	80,000	1983
U S ARMY CORPS OF ENGINEERS	R B RUSSELL NO 1	F	H	75,000	1984
U S ARMY CORPS OF ENGINEERS	R B RUSSELL NO 2	F	H	75,000	1984
U S ARMY CORPS OF ENGINEERS	R B RUSSELL NO 3	F	H	75,000	1985
U S ARMY CORPS OF ENGINEERS	R B RUSSELL NO 4	F	H	75,000	1985
U S ARMY CORPS OF ENGINEERS	ST STEPHEN NO 1	F	H	20,000	1983
U S ARMY CORPS OF ENGINEERS	ST STEPHEN NO 2	F	H	20,000	1983
U S ARMY CORPS OF ENGINEERS	ST STEPHEN NO 3	F	H	20,000	1983
VIRGINIA ELECTRIC & POWER CO	BATH COUNTY NO 1	I	R	350,000	1985
VIRGINIA ELECTRIC & POWER CO	BATH COUNTY NO 2	I	R	350,000	1985
VIRGINIA ELECTRIC & POWER CO	BATH COUNTY NO 3	I	R	350,000	1986
VIRGINIA ELECTRIC & POWER CO	BATH COUNTY NO 4	I	R	350,000	1985
VIRGINIA ELECTRIC & POWER CO	BATH COUNTY NO 5	I	R	350,000	1986
VIRGINIA ELECTRIC & POWER CO	BATH COUNTY NO 6	I	R	350,000	1986
VIRGINIA ELECTRIC & POWER CO	NORTH ANNA NO 3	I	N	907,000	1989

MAIN

CENTRAL ILLINOIS LIGHT CO	DUCK CREEK NO 2	I	T	400,000	1987
CENTRAL ILLINOIS PUBLIC SERVICE CO	NEWTON NO 2	I	T	565,000	1982
COMMONWEALTH EDISON CO	BRAIDWOOD NO 1	I	N	1,120,000	1985
COMMONWEALTH EDISON CO	BRAIDWOOD NO 2	I	N	1,120,000	1986
COMMONWEALTH EDISON CO	BYRON NO 1	I	N	1,120,000	1984
COMMONWEALTH EDISON CO	BYRON NO 2	I	N	1,120,000	1985
COMMONWEALTH EDISON CO	LASALLE COUNTY NO 1	I	N	1,078,000	1982
COMMONWEALTH EDISON CO	LASALLE COUNTY NO 2	I	N	1,078,000	1983
ILLINOIS POWER CO	CLINTON NO 1	I	N	950,000	1984
MARQUETTE MICHIGAN	SHIRAS NO 3	M	T	44,000	1982
SOYLAND POWER COOP	SOYLAND NO 1	C	T	450,000	1987
○SOYLAND POWER COOP	COMPRESSED AIR STORAGE	C	GS	220,000	1986
UNION ELECTRIC CO	CALLAWAY NO 1	I	N	1,120,000	1984
WISCONSIN ELECTRIC POWER CO	PLEASANT PRAIRIE NO 2	I	T	580,000	1984
WISCONSIN POWER & LIGHT CO	EDGEWATER NO 5	I	T	380,000	1985

SPP

ARKANSAS POWER & LIGHT CO	ALEC NO 1	I	T	800,000	1990
ARKANSAS POWER & LIGHT CO	ALEC NO 2	I	T	800,000	1991
ARKANSAS POWER & LIGHT CO	INDEPENDENCE NO 1	I	T	816,000	1983
ARKANSAS POWER & LIGHT CO	INDEPENDENCE NO 2	I	T	816,000	1985
ASSOCIATED ELECTRIC COOP INC	THOMAS HILL NO 3	C	T	630,000	1982
BURLINGTON KANSAS	MUNICIPAL LGT PLANT	M	D	4,800	1983
CAJUN ELECTRIC POWER COOP	BIG CAJUN TWO NO 3	C	T	540,000	1983
CAJUN ELECTRIC POWER COOP	OXBOW NO 1	C	T	512,000	1986
CAJUN ELECTRIC POWER COOP	OXBOW NO 2	C	T	512,000	1990
CENTRAL LOUISIANA ELECTRIC CO	RODEMACHER NO 2	I	T	530,000	1982
○GRAND RIVER DAM AUTHORITY	CHOUTEAU NO 2	SL	T	490,000	1985
GULF STATES UTILITIES CO	NELSON NO 5	I	T	540,000	1990

SPP
Continued

System	Station	Owner-ship	Type	Exp. Net Capability	Sched. Date of Operation	
GULF STATES UTILITIES CO	NELSON NO 6	I	T	540,000	1982	
GULF STATES UTILITIES CO	NELSON NO 7	I	GC	90,000	1982	
GULF STATES UTILITIES CO	RIVER BEND NO 1	I	N	940,000	1985	
+KANSAS GAS & ELECTRIC CO	WOLF CREEK NO 1	I	N	1,150,000	1984	
+KANSAS POWER & LIGHT CO	JEFFREY ELEC CTR NO 3	I	T	680,000	1983	
LOUISIANA POWER & LIGHT CO	WATERFORD NO 3	I	N	1,104,000	1983	
LOUISIANA POWER & LIGHT CO	WILTON NO 1	I	T	800,000	1988	
LOUISIANA POWER & LIGHT CO	WILTON NO 2	I	T	800,000	1990	
MIDDLE SOUTH UTILITIES	EAST ORLEANS NO 1	I	T	800,000	1995	
MIDDLE SOUTH UTILITIES	EAST ORLEANS NO 2	I	T	750,000	1997	
MISSISSIPPI POWER & LIGHT CO	GRAND GULF NO 1	I	N	1,250,000	1983	
MISSISSIPPI POWER & LIGHT CO	GRAND GULF NO 2	I	N	1,250,000	1988	
OKLAHOMA GAS & ELECTRIC CO	MUSKOGEE NO 6	I	T	515,000	1984	
+SOUTHWESTERN ELECTRIC POWER CO	DOLET HILLS NO 1	I	T	640,000	1986	
SOUTHWESTERN ELECTRIC POWER CO	PIRKEY NO 1	I	T	640,000	1985	
SOUTHWESTERN ELECTRIC POWER CO	WELSH NO 3	I	T	528,000	1982	*
SOUTHWESTERN PUBLIC SERVICE CO	TOLK NO 1	I	T	508,000	1982	
SOUTHWESTERN PUBLIC SERVICE CO	TOLK NO 2	I	T	508,000	1985	
SUNFLOWER ELECTRIC COOP	HOLCOMB NO 1	C	T	280,000	1983	
U S ARMY CORPS OF ENGINEERS	CANNON NO 2	F	H	27,000	1984	
U S ARMY CORPS OF ENGINEERS	CANNON NO 1	F	R	31,000	1984	
U S ARMY CORPS OF ENGINEERS	TRUMAN NO 1	F	R	26,666	1982	
U S ARMY CORPS OF ENGINEERS	TRUMAN NO 2	F	R	26,667	1985	
U S ARMY CORPS OF ENGINEERS	TRUMAN NO 3	F	R	26,667	1982	
U S ARMY CORPS OF ENGINEERS	TRUMAN NO 4	F	R	26,666	1982	
U S ARMY CORPS OF ENGINEERS	TRUMAN NO 5	F	R	26,667	1982	
U S ARMY CORPS OF ENGINEERS	TRUMAN NO 6	F	R	26,667	1985	
WESTERN FARMERS ELECTRIC COOPERATIVE	EAST OKLAHOMA COAL NO 1	C	T	376,000	1982	

ERCOT

+BRAZOS ELECTRIC POWER COOP	SAN MIGUEL NO 1	C	T	400,000	1982	*
CENTRAL POWER & LIGHT CO	COLETO CREEK NO 2	I	T	700,000	1992	
HOUSTON LIGHTING & POWER CO	LIMESTONE NO 1	I	T	700,000	1986	
HOUSTON LIGHTING & POWER CO	LIMESTONE NO 2	I	T	700,000	1987	
HOUSTON LIGHTING & POWER CO	PARISH NO 8	I	T	540,000	1983	
+HOUSTON LIGHTING & POWER CO	SOUTH TEXAS NO 1	I	N	1,250,000	1987	
+HOUSTON LIGHTING & POWER CO	SOUTH TEXAS NO 2	I	N	1,250,000	1989	
HOUSTON LIGHTING & POWER CO	MALAKOFF NO 1	I	T	600,000	1988	
HOUSTON LIGHTING & POWER CO	MALAKOFF NO 2	I	T	600,000	1989	
LOWER COLORADO RIVER AUTHORITY	FAYETTE NO 3	SL	T	400,000	1988	
TEXAS MUNICIPAL POWER AGENCY	GIBBONS CREEK NO 1	M	T	400,000	1983	
+TEXAS UTILITIES CO SYSTEM	COMANCHE PEAK NO 1	I	N	1,150,000	1984	
+TEXAS UTILITIES CO SYSTEM	COMANCHE PEAK NO 2	I	N	1,150,000	1985	
TEXAS UTILITIES CO SYSTEM	FOREST GROVE NO 1	I	T	750,000	1989	
+TEXAS UTILITIES CO SYSTEM	MARTIN LAKE NO 4	I	T	750,000	1990	
+TEXAS UTILITIES CO SYSTEM	TWIN OAK NO 1	I	T	750,000	1988	
+TEXAS UTILITIES CO SYSTEM	TWIN OAK NO 2	I	T	750,000	1990	
WEST TEXAS UTILITIES CO	OKLAUNION NO 1	I	T	640,000	1986	

MAPP

System	Station	Owner-ship	Type	Exp. Net Capability	Sched. Date of Operation
AMES IOWA	AMES NO 8	M	T	60,000	1982 *
BASIN ELECTRIC POWER COOP	ANTELOPE VALLEY NO 1	C	T	416,000	1983
BASIN ELECTRIC POWER COOP	ANTELOPE VALLEY NO 2	C	T	378,000	1985
GRAND ISLAND NEBRASKA	PLATT NO 1	M	T	100,000	1982
IOWA ELECTRIC LIGHT & POWER CO	GUTHRIE COUNTY NO 1	I	T	650,000	1988
+IOWA-ILLINOIS GAS & ELECTRIC CO	LOUISA NO 1	I	T	650,000	1983
IOWA PUBLIC SERVICE CO	NEAL NO 5	I	T	400,000	1990
MINNESOTA POWER & LIGHT CO	OLIVER COUNTY NO 1	I	T	500,000	1991
MUSCATINE IOWA	MUSCATINE NO 9	M	T	150,000	1982
NEBRASKA PUBLIC POWER DISTRICT	GENTLEMAN NO 2	SL	T	600,000	1982 *
NEBRASKA PUBLIC POWER DISTRICT	KINGSLEY NO 1	SL	H	38,000	1985
+NORTHERN STATES POWER CO	SHERBURNE COUNTY NO 3	I	T	800,000	1986
OTTER TAIL POWER CO	SPIRITWOOD NO 1	I	T	108,000	1988

WSCC

System	Station	Owner-ship	Type	Exp. Net Capability	Sched. Date of Operation
ARIZONA PUBLIC SERVICE CO	CHOLLA NO 5	I	T	340,000	1991
ARIZONA PUBLIC SERVICE CO	PALO VERDE NO 1	I	N	1,270,000	1983
ARIZONA PUBLIC SERVICE CO	PALO VERDE NO 2	I	N	1,270,000	1984
ARIZONA PUBLIC SERVICE CO	PALO VERDE NO 3	I	N	1,270,000	1986
+BASIN ELECTRIC POWER COOPERATIVE	LARAMIE RIVER NO 2	C	T	550,000	1982
○CALIFORNIA DEPT OF WATER RESOURCES	BOTTLE ROCK	SL	T	55,000	1984
CALIFORNIA DEPT OF WATER RESOURCES	W E WARREN NO 1	SL	H	38,000	1982
CALIFORNIA DEPT OF WATER RESOURCES	W E WARREN NO 2	SL	H	38,000	1982
COLORADO-UTE ELECTRIC ASSOCIATION	CRAIG NO 3	C	T	400,000	1983
COLORADO-UTE ELECTRIC ASSOCIATION	SOUTHWEST NO 1	C	T	500,000	1988
DESERET G & T COOP	BONANZA NO 1	C	T	360,000	1984
+LOS ANGELES CALIFORNIA	INTERMOUNTAIN NO 1	M	T	750,000	1986
+LOS ANGELES CALIFORNIA	INTERMOUNTAIN NO 2	M	T	750,000	1987
+LOS ANGELES CALIFORNIA	INTERMOUNTAIN NO 3	M	T	750,000	1988
+LOS ANGELES CALIFORNIA	INTERMOUNTAIN NO 4	M	T	750,000	1989
○METROPOLITAN WATER DISTRICT	SEPULVEDA CANYON NO 1	M	H	8,600	1982
○METROPOLITAN WATER DISTRICT	VENICE NO 1	M	H	10,100	1982
○METROPOLITAN WATER DISTRICT	PERRIS NO 1	M	H	7,900	1983
○METROPOLITAN WATER DISTRICT	RED MOUNTAIN NO 1	M	H	5,900	1984
○METROPOLITAN WATER DISTRICT	VALLEY VIEW NO 1	M	H	4,100	1984
+MONTANA POWER CO	COLSTRIP NO 3	I	T	700,000	1984
+MONTANA POWER CO	COLSTRIP NO 4	I	T	700,000	1985
NEVADA POWER CO	CLARK NO 8	I	G	70,000	1982
+NEVADA POWER CO	REID GARDNER NO 4	I	T	250,000	1983
○NORTHERN CALIFORNIA POWER AUTHORITY	GEOTHERMAL NO 1	SL	T	53,000	1982
○NORTHERN CALIFORNIA POWER AUTHORITY	GEOTHERMAL NO 2	SL	T	53,000	1982
PACIFIC GAS & ELECTRIC CO	DIABLO CANYON NO 1	I	N	1,084,000	1982
PACIFIC GAS & ELECTRIC CO	DIABLO CANYON NO 2	I	N	1,106,000	1983
PACIFIC GAS & ELECTRIC CO	GEYSERS NO 16	I	T	110,000	1985
PACIFIC GAS & ELECTRIC CO	GEYSERS NO 17	I	T	110,000	1982
○PACIFIC GAS & ELECTRIC CO	GEYSERS NO 18	I	T	110,000	1983
○PACIFIC GAS & ELECTRIC CO	GEYSERS NO 20	I	T	110,000	1986
PACIFIC GAS & ELECTRIC CO	HELMS NO 1	I	P	374,000	1982
PACIFIC GAS & ELECTRIC CO	HELMS NO 2	I	P	374,000	1982
PACIFIC GAS & ELECTRIC CO	HELMS NO 3	I	P	375,000	1983
PACIFIC GAS & ELECTRIC CO	KERCKHOFF NO 2	I	H	151,000	1983
+PACIFIC POWER & LIGHT CO	WYODAK NO 2	I	T	310,000	1988
PLAINS ELECTRIC GENERATION&TRANSMISSION	ESCALANTE NO 1	C	T	210,000	1984
PLATTE RIVER POWER AUTHORITY	RAWHIDE NO 1	SL	T	250,000	1984
○PORTLAND OREGON	BULL RUN NO 1	M	H	27,000	1982 *
○PORTLAND OREGON	BULL RUN NO 2	M	H	11,000	1982 *
○PUBLIC SERVICE CO OF COLORADO	PAWNEE NO 2	I	T	485,000	1988
+PUBLIC SERVICE CO OF NEW MEXICO	NEW MEXICO STA NO 1	I	T	500,000	1990
PUBLIC SERVICE CO OF NEW MEXICO	NEW MEXICO STA NO 2	I	T	500,000	1993
PUBLIC SERVICE CO OF NEW MEXICO	NEW MEXICO STA NO 3	I	T	500,000	1995

WSCC
Continued

	System	Station	Owner-ship	Type	Exp. Net Capability	Sched. Date of Operation
	PUBLIC SERVICE CO OF NEW MEXICO	NEW MEXICO STA NO 4	I	T	500,000	1998
+	PUBLIC SERVICE CO OF NEW MEXICO	SAN JUAN NO 4	I	T	472,000	1982
+	PUGET SOUND POWER & LIGHT CO	SKAGIT NO 1	I	N	1,288,000	1991
+	PUGET SOUND POWER & LIGHT CO	SKAGIT NO 2	I	N	1,288,000	1993
o	PUGET SOUND POWER & LIGHT CO	FREDONIA NO 1	I	G	123,500	1983
o	PUGET SOUND POWER & LIGHT CO	FREDONIA NO 2	I	G	123,500	1983
o	SACRAMENTO UTILITY DISTRICT	GEOTHERMAL NO 1	M	T	65,000	1983
o	SACRAMENTO UTILITY DISTRICT	JONES FORK	M	H	10,000	1986
	SALT RIVER POWER DISTRICT	CORONADO NO 3	SL	T	350,000	1991
	SIERRA PACIFIC POWER CO	VALMY NO 2	I	T	250,000	1984
	SOLANO IRRIGATION DISTRICT	MONTICELLO NO 1	SL	H	3,500	1983
	SOLANO IRRIGATION DISTRICT	MONTICELLO NO 2	SL	H	3,500	1983
	SOUTHERN CALIFORNIA EDISON CO	LUCERNE VALLEY CTS	I	G	125,000	1997
	SOUTHERN CALIFORNIA EDISON CO	LUCERNE VALLEY CTS	I	G	125,000	1999
+	SOUTHERN CALIFORNIA EDISON CO	SAN ONOFRE NO 2	I	N	1,100,000	1982
+	SOUTHERN CALIFORNIA EDISON CO	SAN ONOFRE NO 3	I	N	1,100,000	1983
+	SOUTHERN CALIFORNIA EDISON CO	SOLAR ONE	I	T	10,000	1985
	TACOMA WASHINGTON	MAYFIELD NO 4	M	H	39,000	1983
+	TACOMA WASHINGTON	SUMMER FALLS NO 1	M	H	47,000	1985
+	TACOMA WASHINGTON	SUMMER FALLS NO 2	M	H	47,000	1985
	TUCSON GAS & ELECTRIC CO	SPRINGERVILLE NO 1	I	T	350,000	1985
	TUCSON GAS & ELECTRIC CO	SPRINGERVILLE NO 2	I	T	350,000	1987
	U S ARMY CORPS OF ENGINEERS	BONNEVILLE DAM NO 16	F	H	76,000	1982 *
	U S ARMY CORPS OF ENGINEERS	BONNEVILLE DAM NO 15	F	H	76,000	1982
	U S ARMY CORPS OF ENGINEERS	BONNEVILLE DAM NO 14	F	H	76,000	1982
	U S ARMY CORPS OF ENGINEERS	BONNEVILLE DAM NO 13	F	H	76,000	1982
	U S ARMY CORPS OF ENGINEERS	BONNEVILLE DAM NO 12	F	H	76,000	1982
	U S ARMY CORPS OF ENGINEERS	BONNEVILLE DAM NO 11	F	H	76,000	1982
	U S ARMY CORPS OF ENGINEERS	LIBBY NO 5	F	H	121,000	1984
	U S ARMY CORPS OF ENGINEERS	LIBBY NO 6	F	H	121,000	1984
	U S ARMY CORPS OF ENGINEERS	LIBBY NO 7	F	H	121,000	1984
	U S ARMY CORPS OF ENGINEERS	LIBBY NO 8	F	H	121,000	1984
	U S BUREAU OF RECLAMATION	GRAND COULEE PG-9	F	H	50,000	1982
	U S BUREAU OF RECLAMATION	GRAND COULEE PG-10	F	H	50,000	1983
	U S BUREAU OF RECLAMATION	GRAND COULEE PG-11	F	H	50,000	1983
	U S BUREAU OF RECLAMATION	GRAND COULEE PG-12	F	H	50,000	1983
	U S BUREAU OF RECLAMATION	MT ELBERT NO 2	F	H	100,000	1983
	UTAH POWER & LIGHT CO	HUNTER NO 3	I	T	400,000	1983
	UTAH POWER & LIGHT CO	HUNTER NO 4	I	T	400,000	1985
o	UTAH POWER & LIGHT CO	MILFORD GEOTHERMAL	I	T	20,000	1984
	WARM SPRINGS OREGON INDIAN RESERVATION	PELTON DAM OREGON	SL	H	21,000	1982
	WASHINGTON PUBLIC POWER SUPPLY SYSTEM	WNP NO 2	SL	N	1,100,000	1984
	WASHINGTON PUBLIC POWER SUPPLY SYSTEM	WNP NO 3	SL	N	1,240,000	1986
	WASHINGTON PUBLIC POWER SUPPLY SYSTEM	WNP NO 1	SL	N	1,250,000	1991
o	WASHINGTON WATER POWER CO	KETTLE FALLS	I	T	42,200	1983

NUMBER OF UNITS = 308 AMOUNT OF EXP. NET CAPABILITY = 158,533,650

EDISON ELECTRIC
INSTITUTE